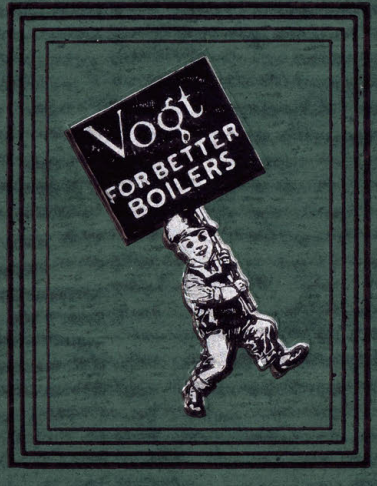
Vogt WATER TUBE BOILERS



W. E. MUSE
1509 UNION TRUST BLDG.
TELE MAIN 0077 CINTI. O.

HENRY VOGT MACHINE CO.
INCORPORATED
LOUISVILLE, KENTUCKY

Vogt
WATER TUBE BOILERS

BULLETIN WT-3

HENRY VOGT MACHINE CO.
INCORPORATED
LOUISVILLE - KENTUCKY
NEW YORK CHICAGO PHILADELPHIA CLEVELAND DALLAS

W. E. MUSE
1309 UNION TRUST BLDG.
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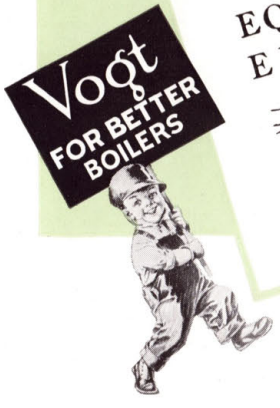
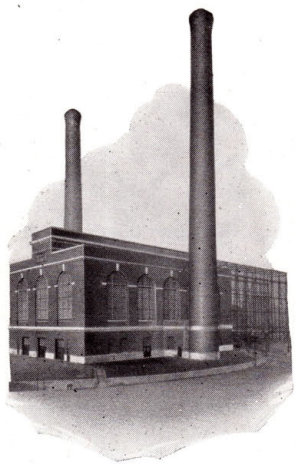
Vogt

PRODUCTS

WATER TUBE AND HORIZONTAL TUBULAR BOILERS—DROP FORGED STEEL VALVES AND FITTINGS—ICE MAKING AND REFRIGERATING MACHINERY—OIL REFINERY EQUIPMENT—HEAT EXCHANGERS...



FOREWORD



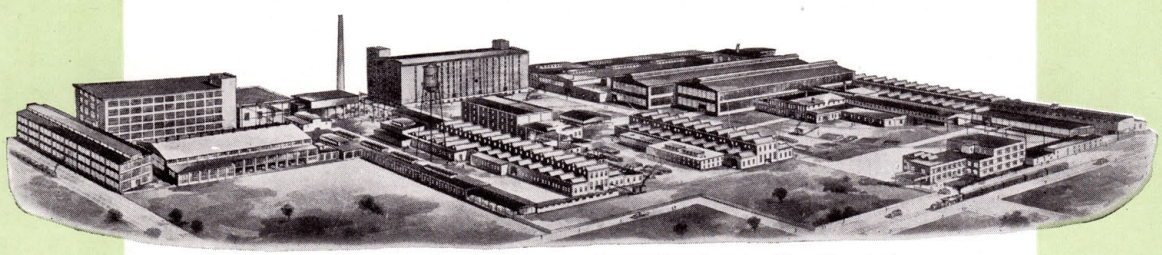
THE latest designs of Vogt Standard Commercial Steam Boilers other than special high pressure types are thoroughly defined in this bulletin.

The information given will be of extreme interest to engineers and those contemplating the installation of new or added steam generating units.

In the Vogt Boiler, the ultimate aim consistent with safety, is efficiency and economy of operation at maximum capacity. These fundamentals are realized in the following classes or types of boilers:

1—The Three Drum Curved Tube—Class R
2—The Four Drum Curved Tube—Class M
3—Low Head Type Curved Tube—Class MLL
4—The Cross Drum Straight Tube—Class S
5—The Waste Heat—Class WH

It will be noted that a suitable design of Vogt Boiler, likewise a setting adapted to any fuel, is available for any purpose, whether for power generation or heating service. Our experience is at your disposal in determining a suitable design for your individual need.



The Plant of the Henry Vogt Machine Co., Louisville, Kentucky

THE VOGT R BOILER

The modern demand for high overloads to be carried on boilers without appreciable loss in efficiency has been responsible for the design of the Vogt Class R Boilers. High rating means the quick generation of large volumes of steam in small volumes of space and necessitates very rapid, positive and unrestricted circulation; in other words maintenance of efficiency. This is a dominant feature of the Vogt Boiler.

High rating, too, causes rapid concentration of chemical salts and a tendency in other and older designs of boilers to prime—sometimes to the point of being dangerous. The possibility of forcing high percentages of moisture through the steam nozzle of the Vogt R Boiler is entirely eliminated and since the steam generated must first pass through drying tubes, the purchaser may feel assured that this boiler is not only safe but will deliver a full volume of steam free of moisture.

CONSTRUCTION

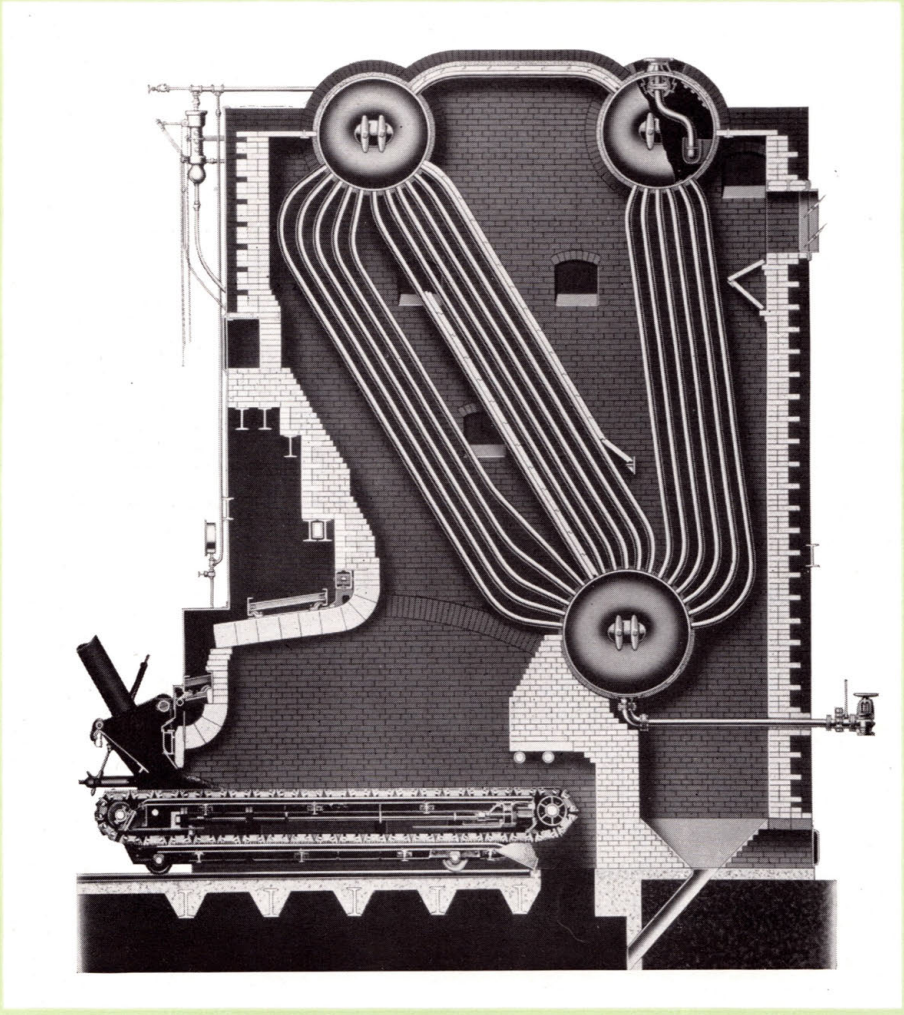
The construction is simple, comprising three drums and their connecting tubes. The structural supports are not only braced but the columns are tied with girth channels which also help to bind the brickwork. The drums are rolled in one piece with only one longitudinal seam. The tubes are all bent to the same radius on long easy curves. Any one tube can be removed without disturbing any other. All parts are easily accessible both inside and outside for inspection or cleaning.

The A. S. M. E. Boiler Construction Code is followed throughout, and the best grade material with intelligent, conscientious workmanship, combine to produce quality that gives complete satisfaction.

FEATURES

QUICK STEAMING
NO PRIMING
NO MOISTURE
HIGH OVERLOADS
LOW STACK TEMPERATURES
HIGH EFFICIENCIES
SMALL FLOOR SPACE
LOW MAINTENANCE COST

VOGT THREE DRUM CURVED TUBE BOILER
CLASS RH

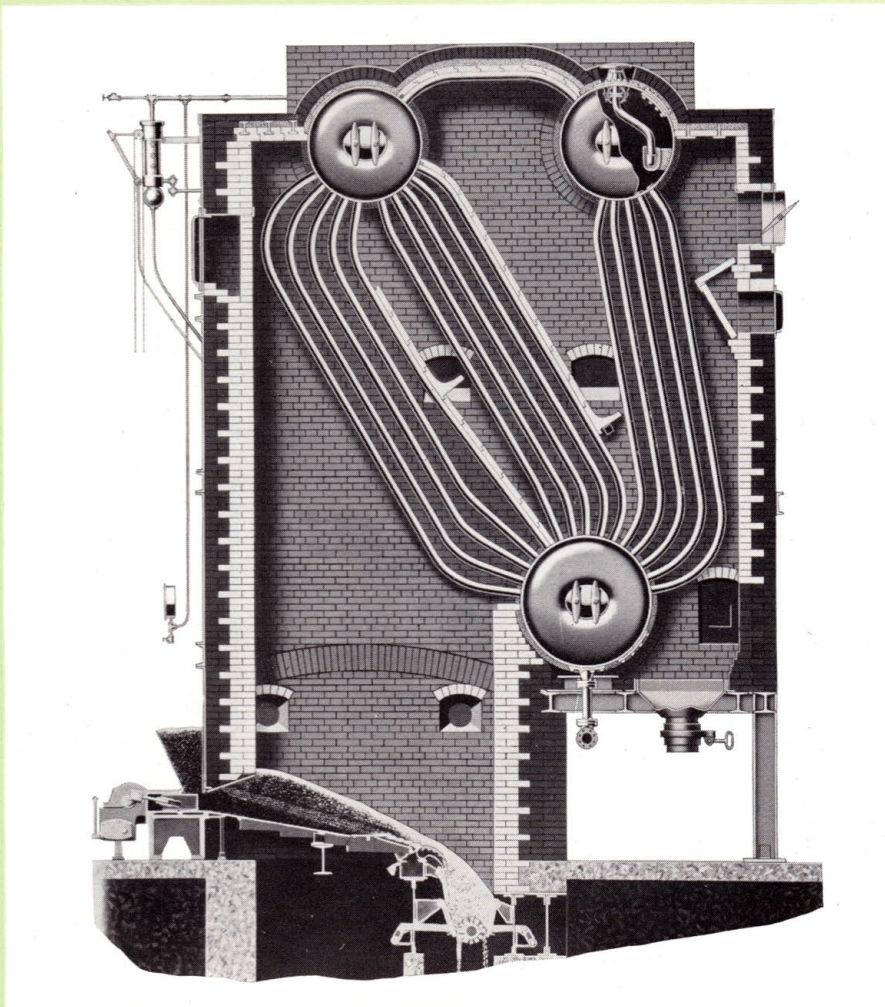


The Vogt Class RH Boiler is designed for high settings and is therefore only adaptable where sufficient head room is available.

In most installations of this class boiler, half or full water walls are employed like shown on page 16. Sufficient grate area, even for the poorest grades of fuel, can easily be provided and in the long travel to the stack outlet all gases are thoroughly and easily relieved of their heat. Baffling may be arranged for four passages of the gas to provide even greater travel, in which event the stack outlet is at the bottom of the setting.

Tubes can be arranged to accommodate superheater

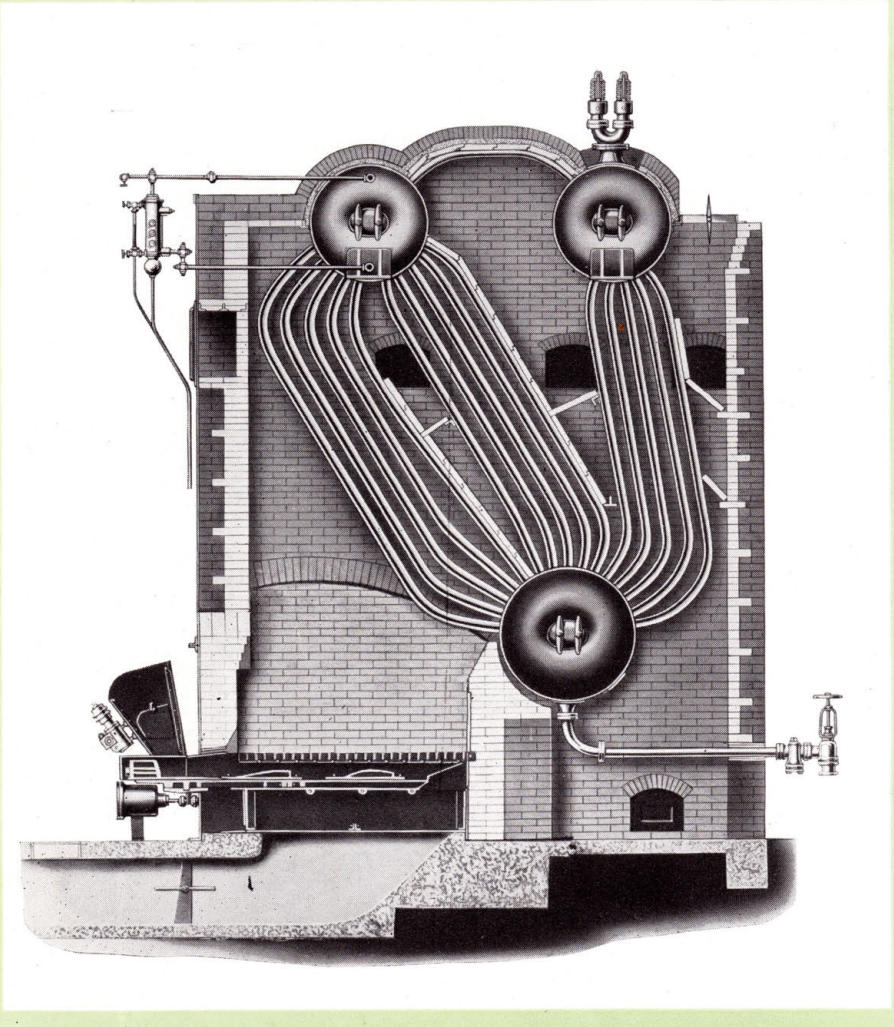
VOGT THREE DRUM CURVED TUBE BOILER
CLASS RS



Here is illustrated the Vogt Class RS Boiler which is considered a standard height and generally installed where normal head room is available. The arrangement of the drums, tube banks, and baffling is essentially the same as the Class RH described on page 6. This boiler has met with much favor under widely varying operating conditions. It possesses the same fundamental qualities as the Class RH Boiler shown on the preceding page as regards kind of fuel, method of firing, circulation of both water and gases, and other admirable features described in detail herein.

Tubes can be arranged to accommodate superheater

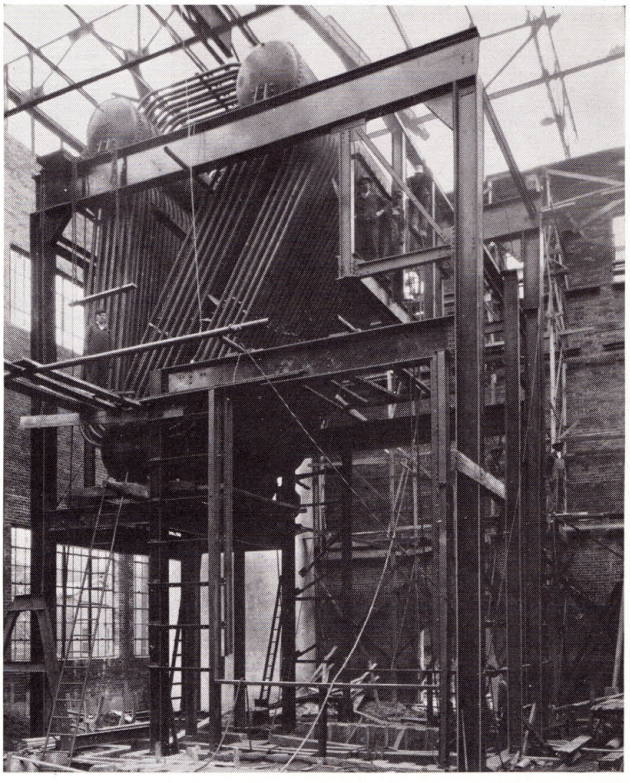
VOGT THREE DRUM CURVED TUBE BOILER
CLASS RL



Above is shown the Vogt Class RL Boiler by which symbol is meant its adaptability to low head room. It will be noted in comparison to pages 6 and 7 that the setting is considerably lower and finds favor in the existing boiler house where maximum surface is desired in minimum quarters. The underfeed type stoker is practical in most installations of this boiler except, of course, where fuel other than coal is used. The same fundamental ideas in circulation both for water and gases are incorporated in the Class RL as in the RH and RS on pages 6 and 7 respectively. For very limited space or unusually low head room, see Class MLL Boiler, page 41.

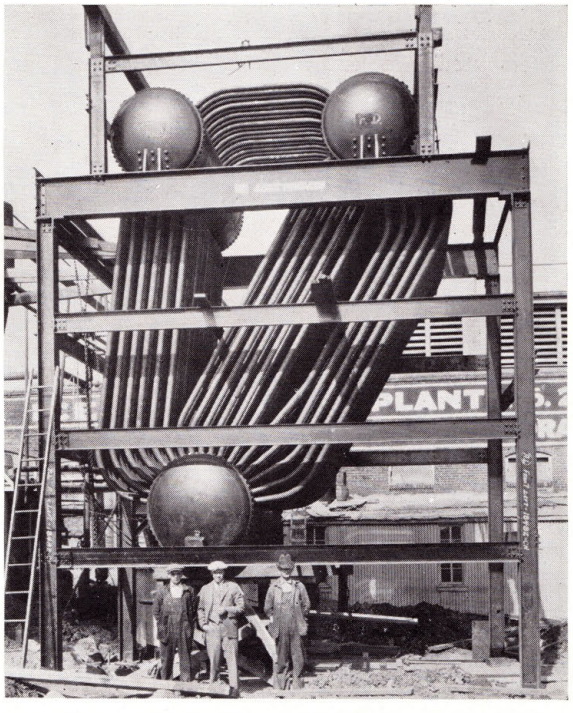
Tubes can be arranged to accommodate superheater

SIMPLIFIED ERECTION REDUCES INITIAL COST

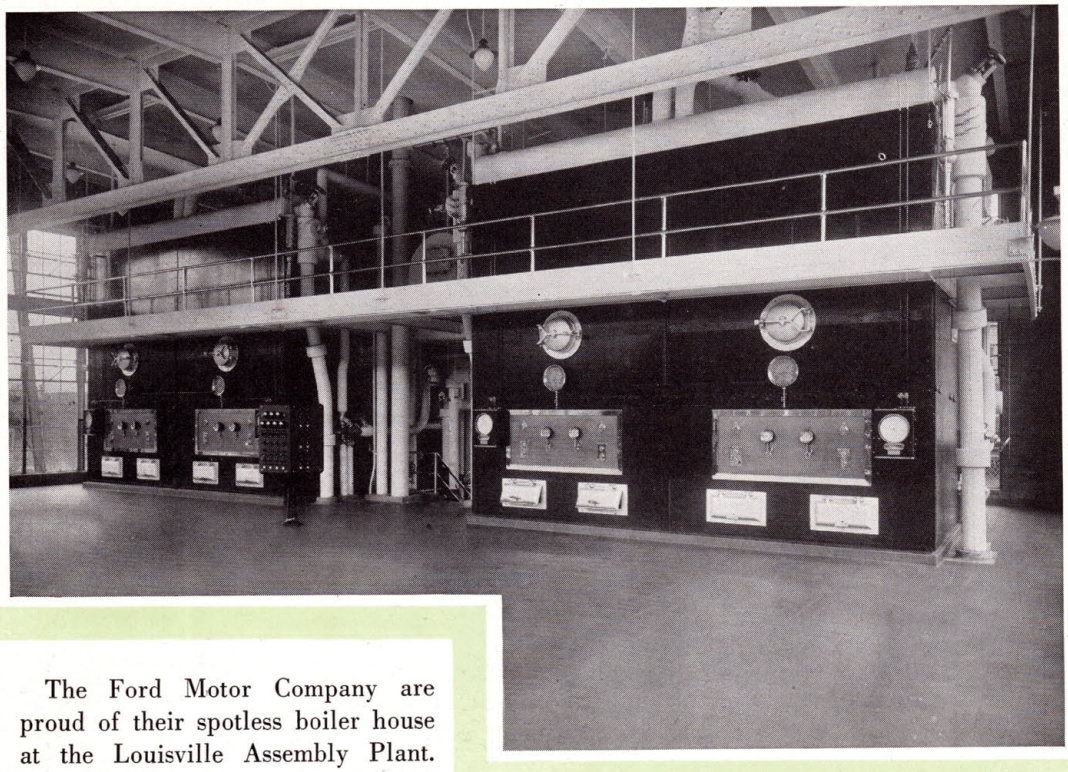


During the course of erection this picture was made at the Mengel Company plant, automotive division at Louisville, Ky. Here a problem of wood refuse disposal was solved with two Vogt 860 H. P. boilers. Compared to the images in the illustration and further reference to page 14, the extreme height of the setting will readily be noted. In this installation water cooled side walls and air cooled front and rear walls were used for the first time successfully in connection with wood refuse burning.

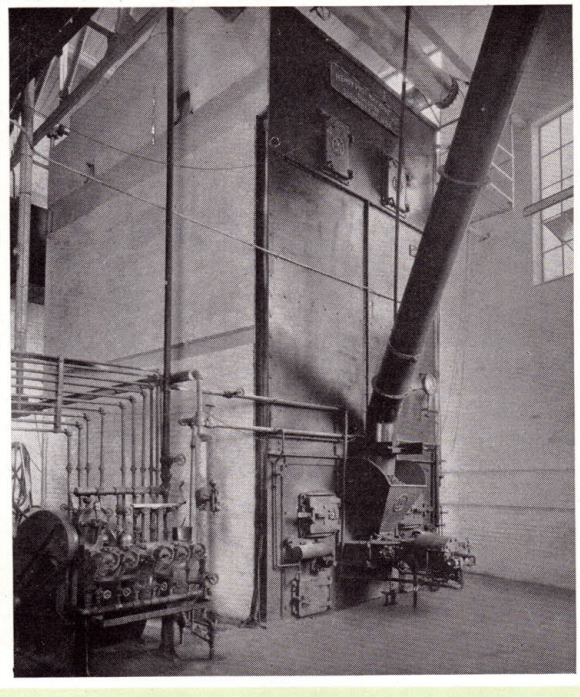
Within six months after the installation of the 410 H. P. Class RS Boiler shown on the right, the Southwestern Utility Ice Company of Tulsa, Okla. ordered a second unit, this time a 500 H. P. Class RH. The second boiler was purchased purely on the performance record of the first. Note particularly the method of suspension entirely independent of the brickwork, allowing for free expansion and contraction.



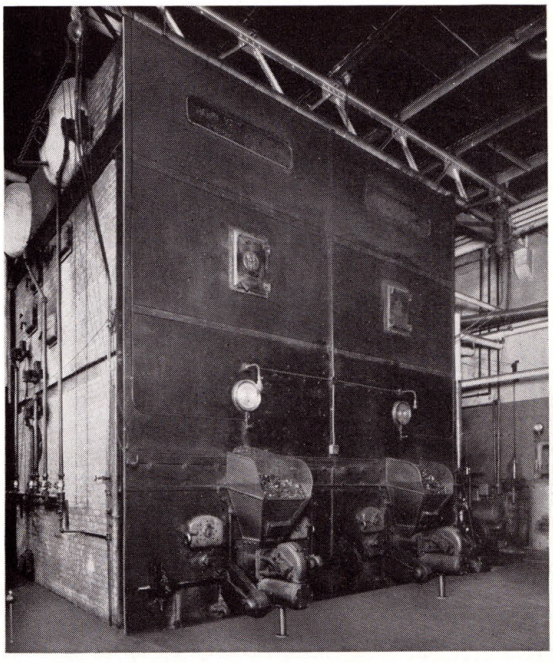
COMPACT AND NEAT INSTALLATIONS OF VOGT CLASS R THREE DRUM BOILERS



The Ford Motor Company are proud of their spotless boiler house at the Louisville Assembly Plant. Here four 275 H. P. Class RS Oil Fired Boilers have given efficient uninterrupted service for the past five years. Nickel trimmings, tile floors and enameled walls are fitting fixtures with Vogt Boilers in this show place among boiler rooms.

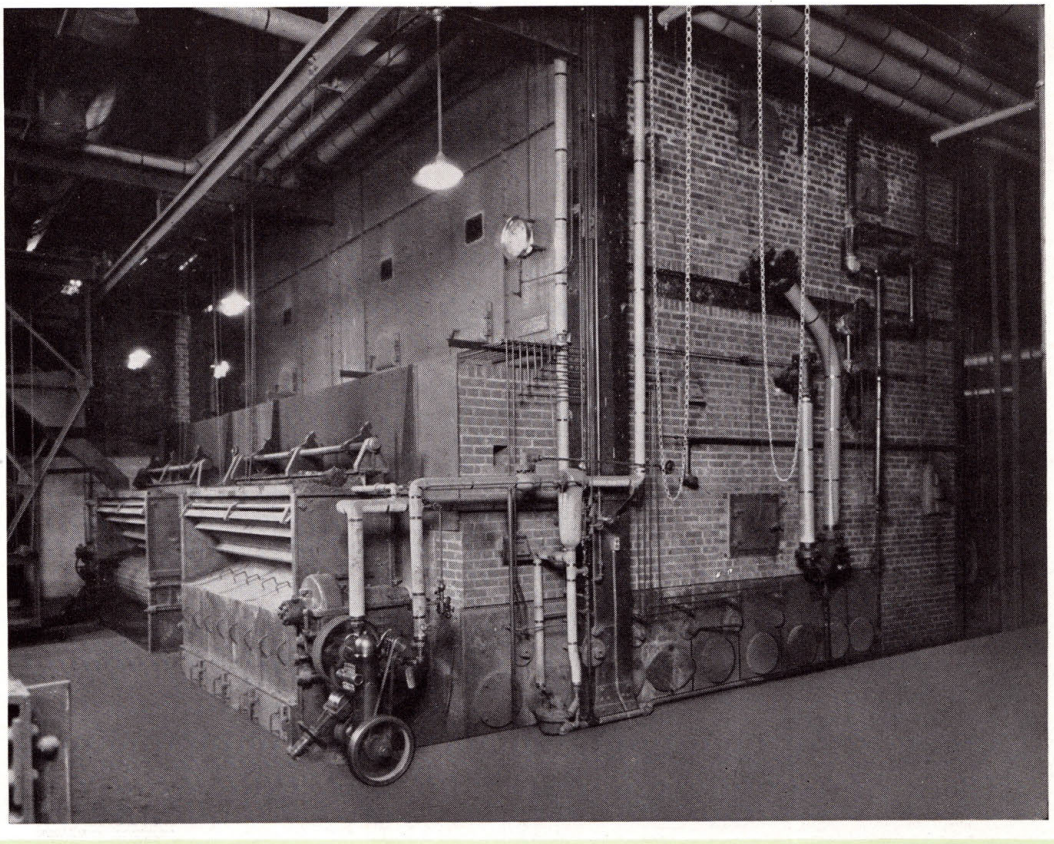


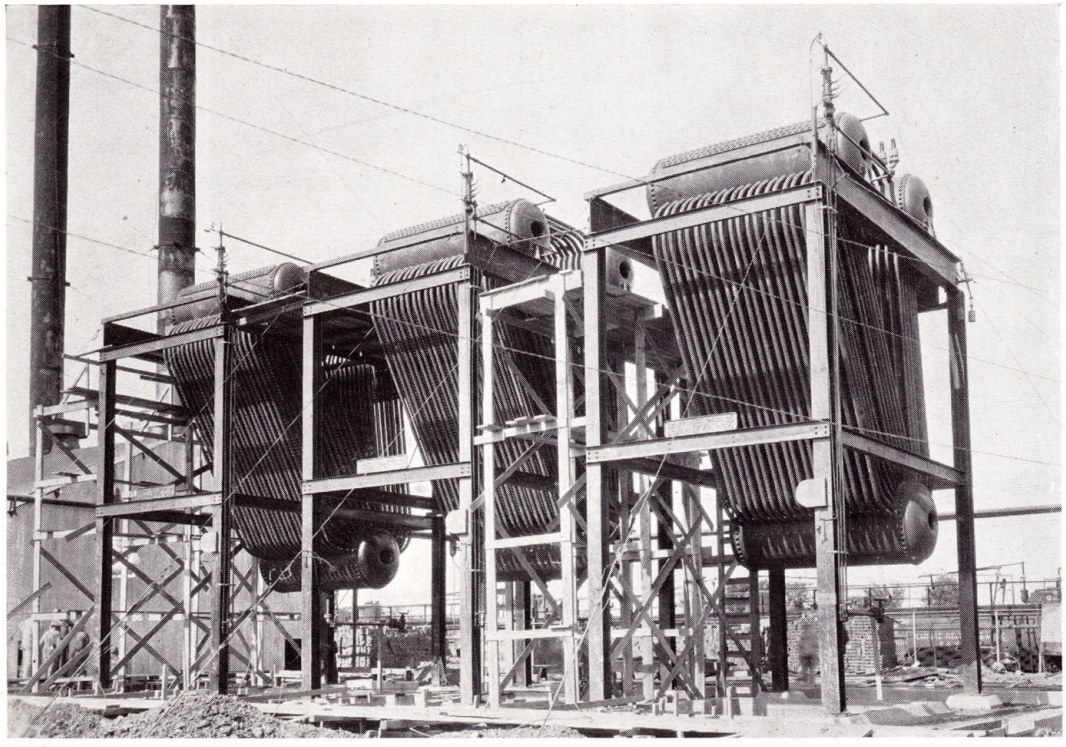
This 300 H. P. Class RH Boiler has been operating at the Toledo Machine & Tool Co. at Toledo, Ohio, for the past year, in which time a duplicate unit has been installed next to it.



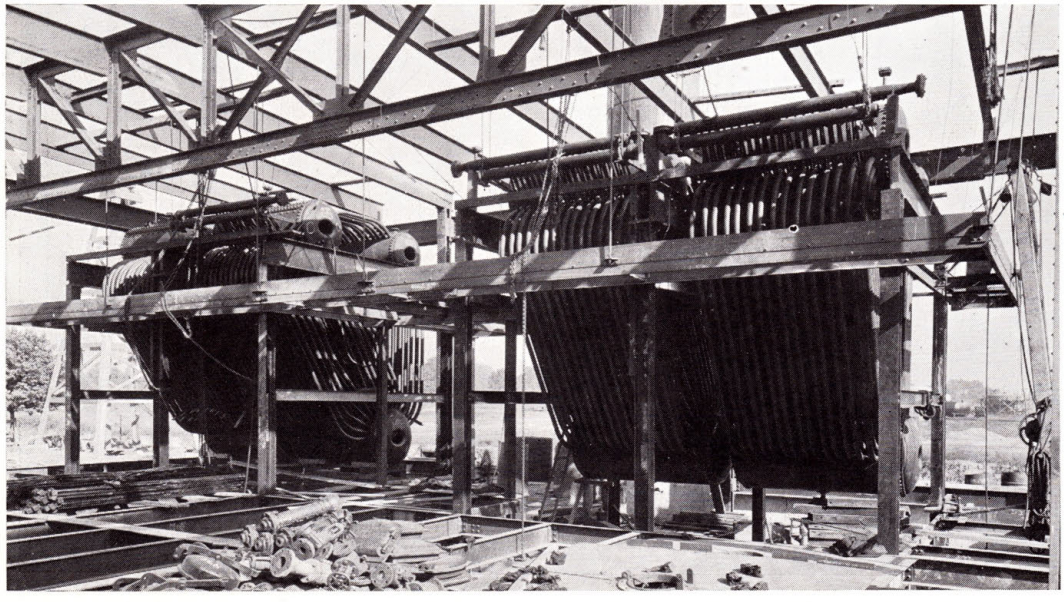
Two 200 H. P. Class RS Vogt Boilers are shown here in a battery setting with Detroit underfeed stokers at Detroit Railway & Harbor Terminals Co., Detroit, Michigan.

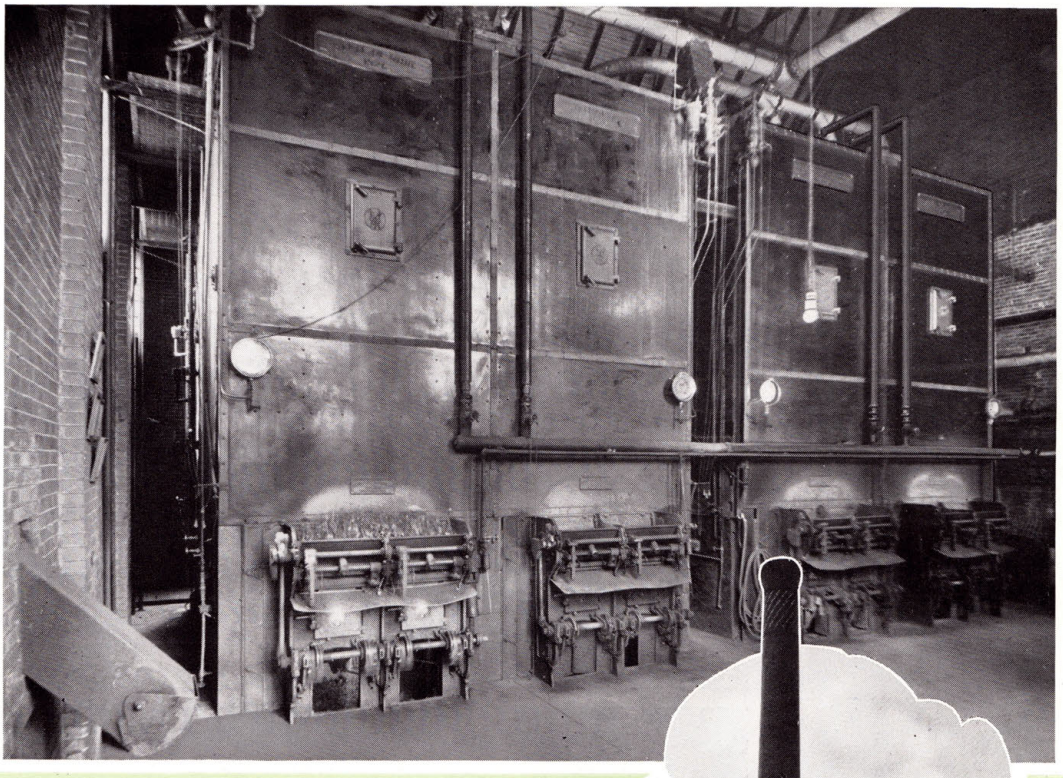
Below is the boiler room at the Indiana University, Bloomington, Ind., where two Vogt 500 H. P. Class RS Boilers have recently been installed. Illinois chain grate stokers feed the furnaces with fuel from overhead bunkers.



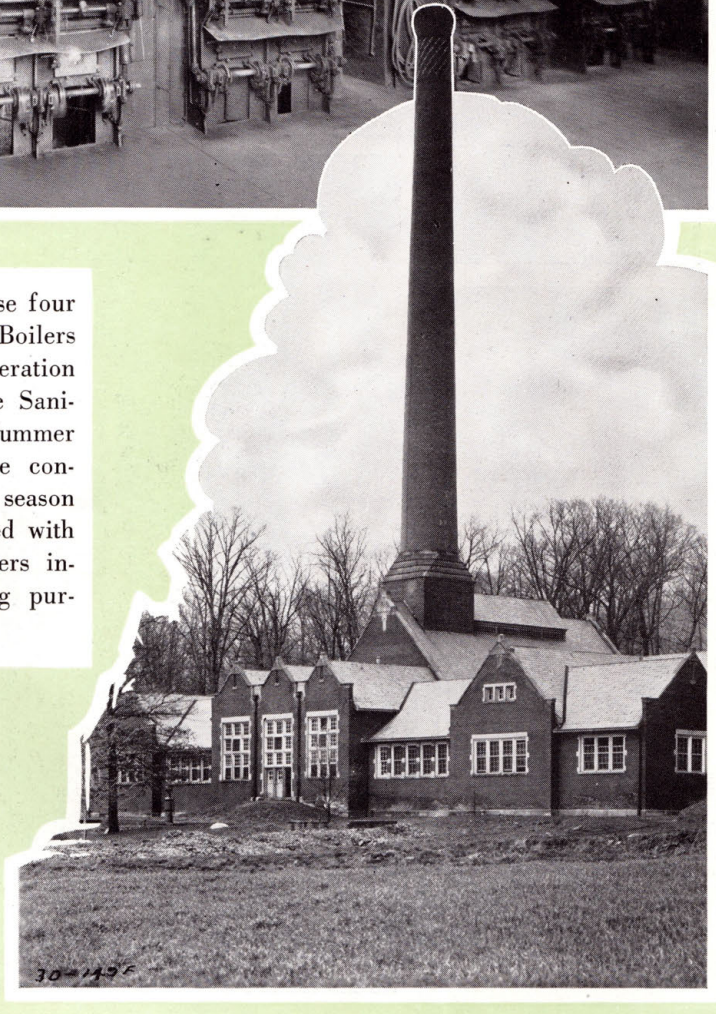


ABOVE: Three 500 H. P. Class RH Boilers ready for the brickwork at Empire Refineries, Okmulgee, Okla. BELOW: Four 275 H. P. Class RS Boilers in two batteries at Ford Motor Co., Louisville, Ky.

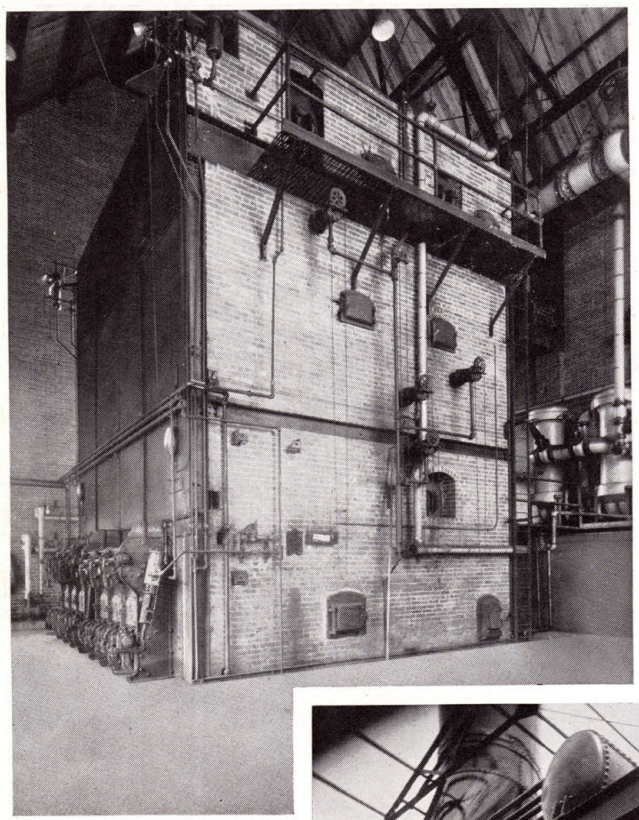




Set in batteries of two, these four 250 H. P. 3 drum Class RH Boilers have been in satisfactory operation since 1926 at the Ohio State Sanitorium, Mt. Vernon, Ohio. Summer delicacies are grown for the convalescent during the winter season in spacious greenhouses heated with steam from two of the boilers installed especially for heating purposes.

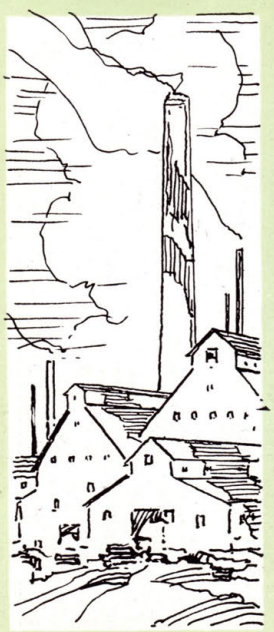


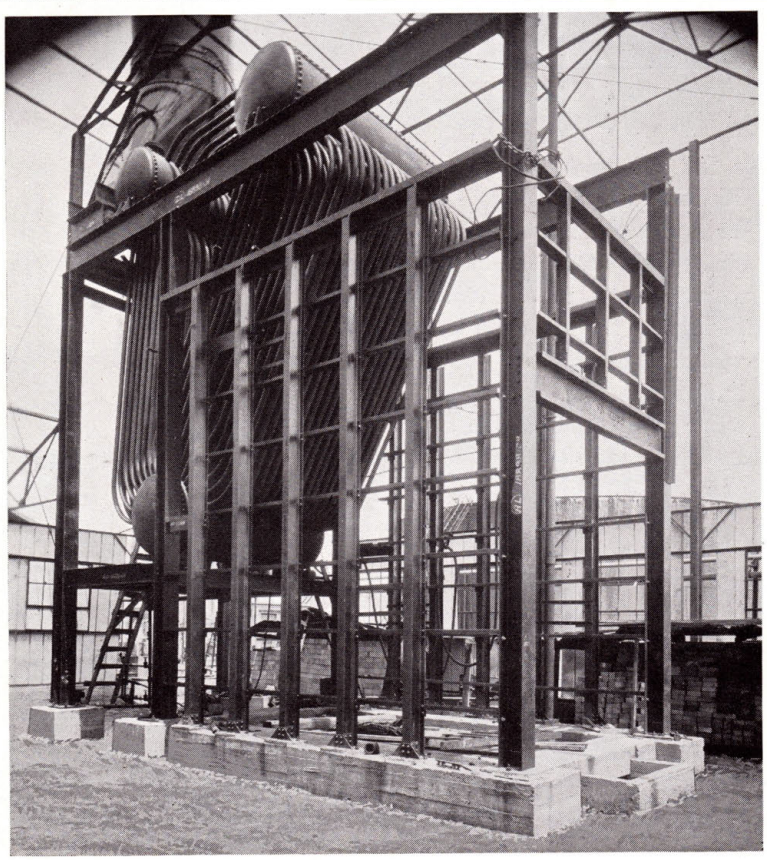
This very modern boiler room houses the above boilers as well as all generating and laundry equipment.

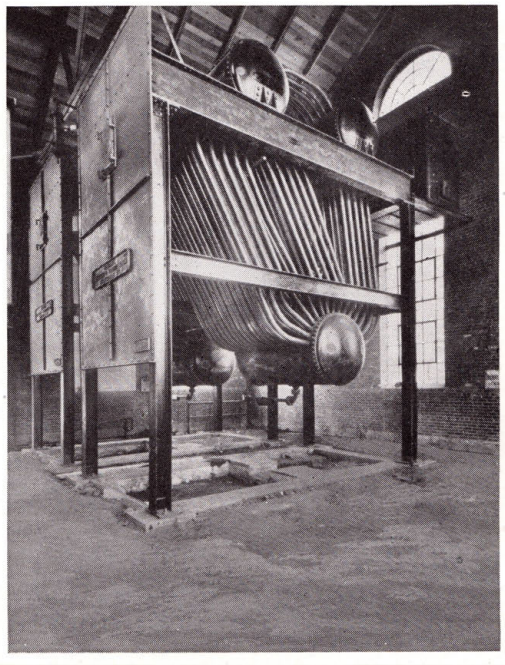


At the Ohio State Hospital, Cleveland, two 275 H. P. 3 drum Class RH Boilers set in battery supply steam for all power and heating purposes.

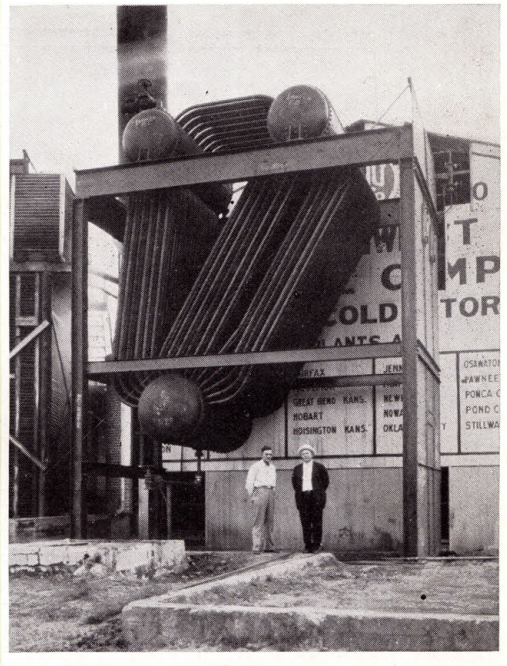
A 500 H. P. Class RH Boiler during erection at the Ashland Refining Company, Ashland, Ky. Note substantial side wall structure for supporting air cooled walls.



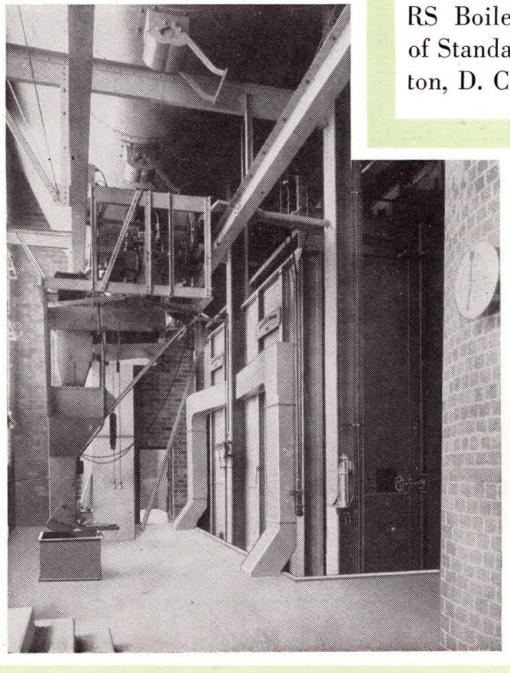




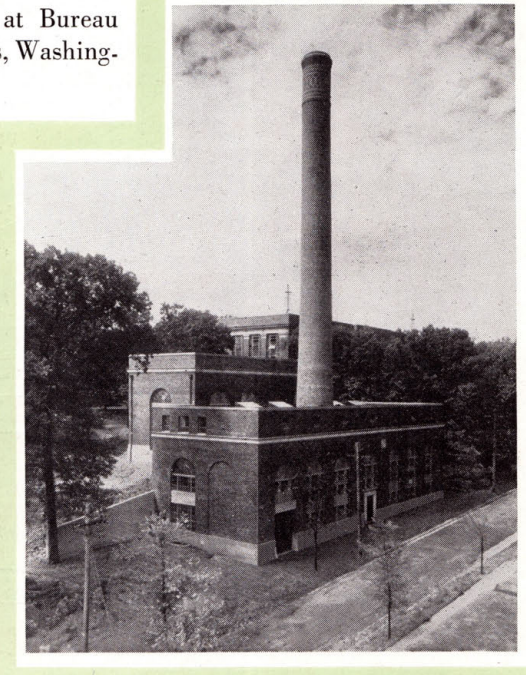
Two 225 H. P. Class RL Boilers at St. Elizabeth's Hospital, Lincoln, Nebraska.

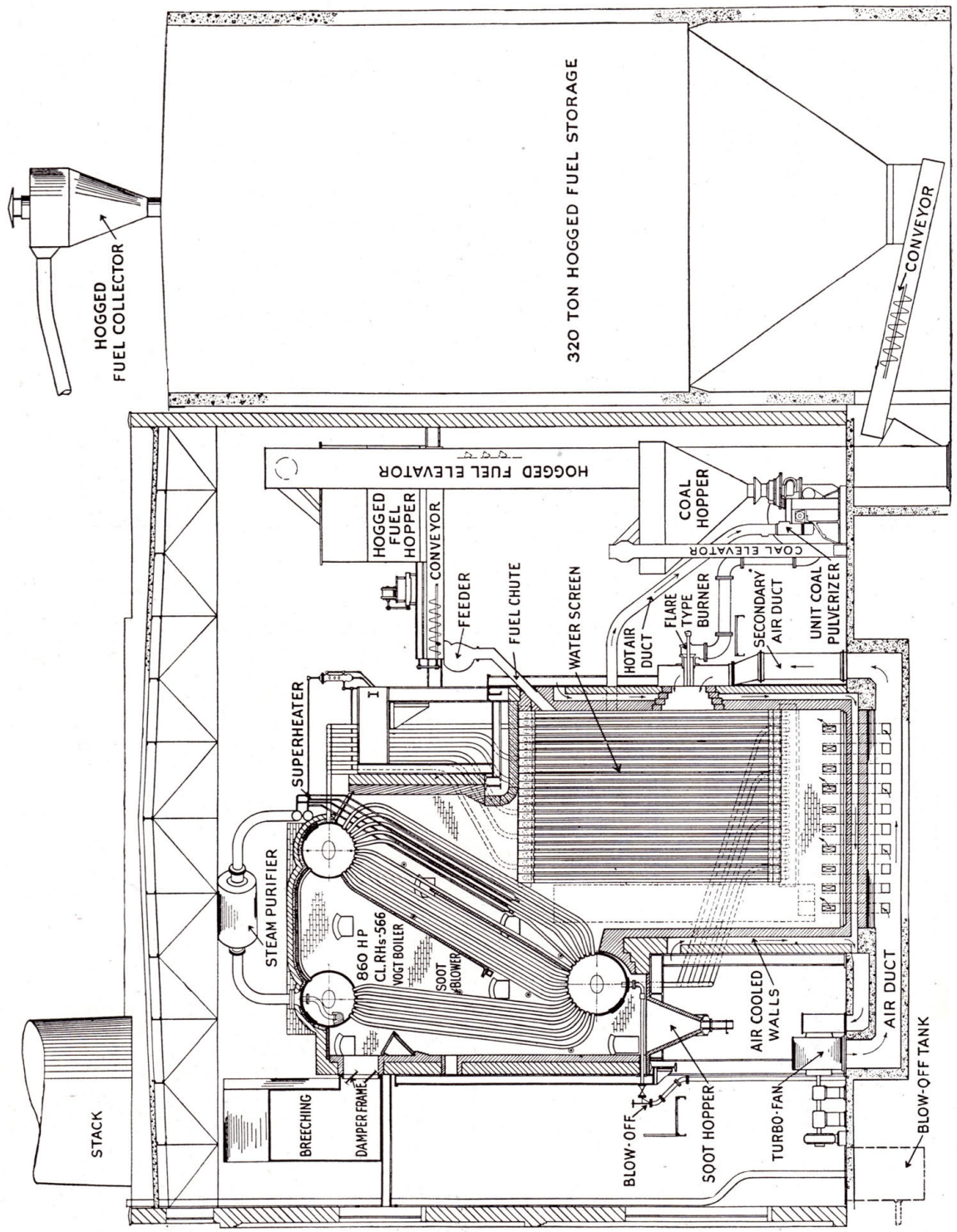


500 H. P. Class RS Boiler at Southwestern Utility Ice Co., Enid, Oklahoma.

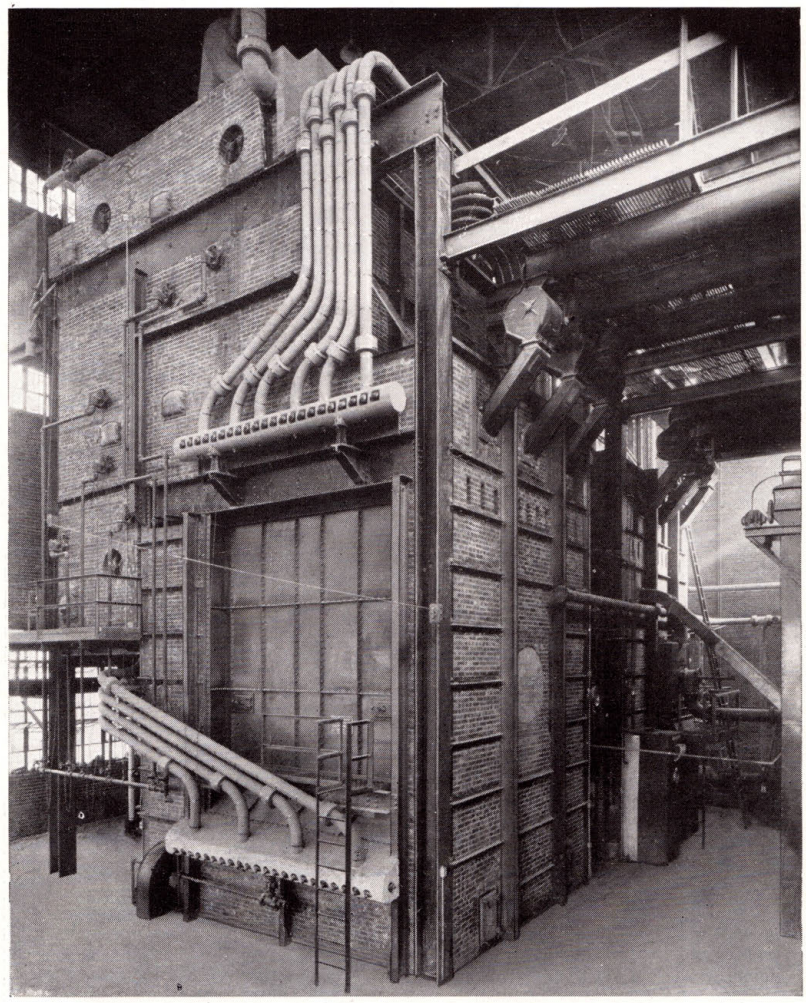


Two 500 H. P. Class RS Boilers at Bureau of Standards, Washington, D. C.



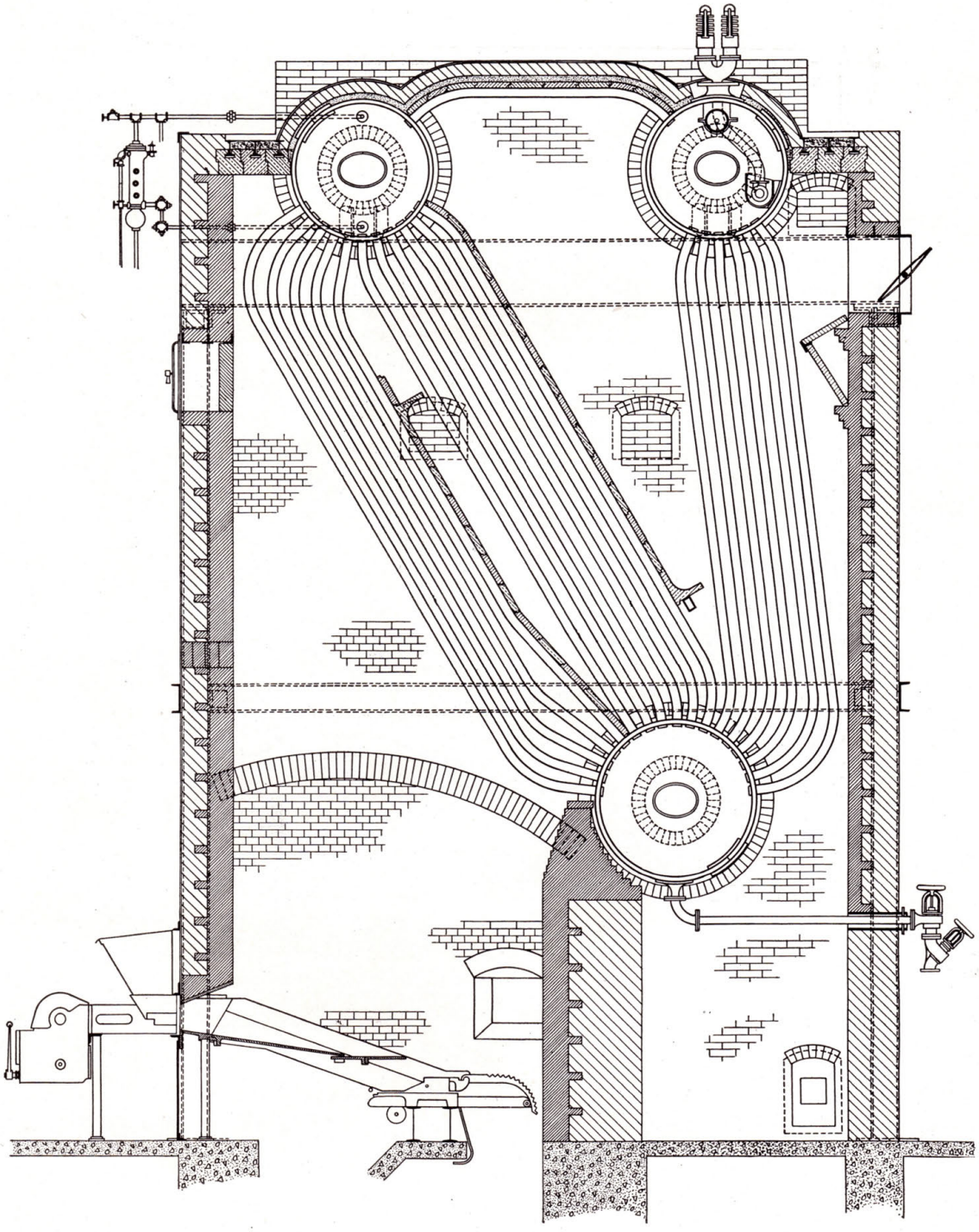


Cross sectional view of two 860 H. P. Class RH Boilers at the Mengel Co., Louisville, Ky.
See completed installation on following page.

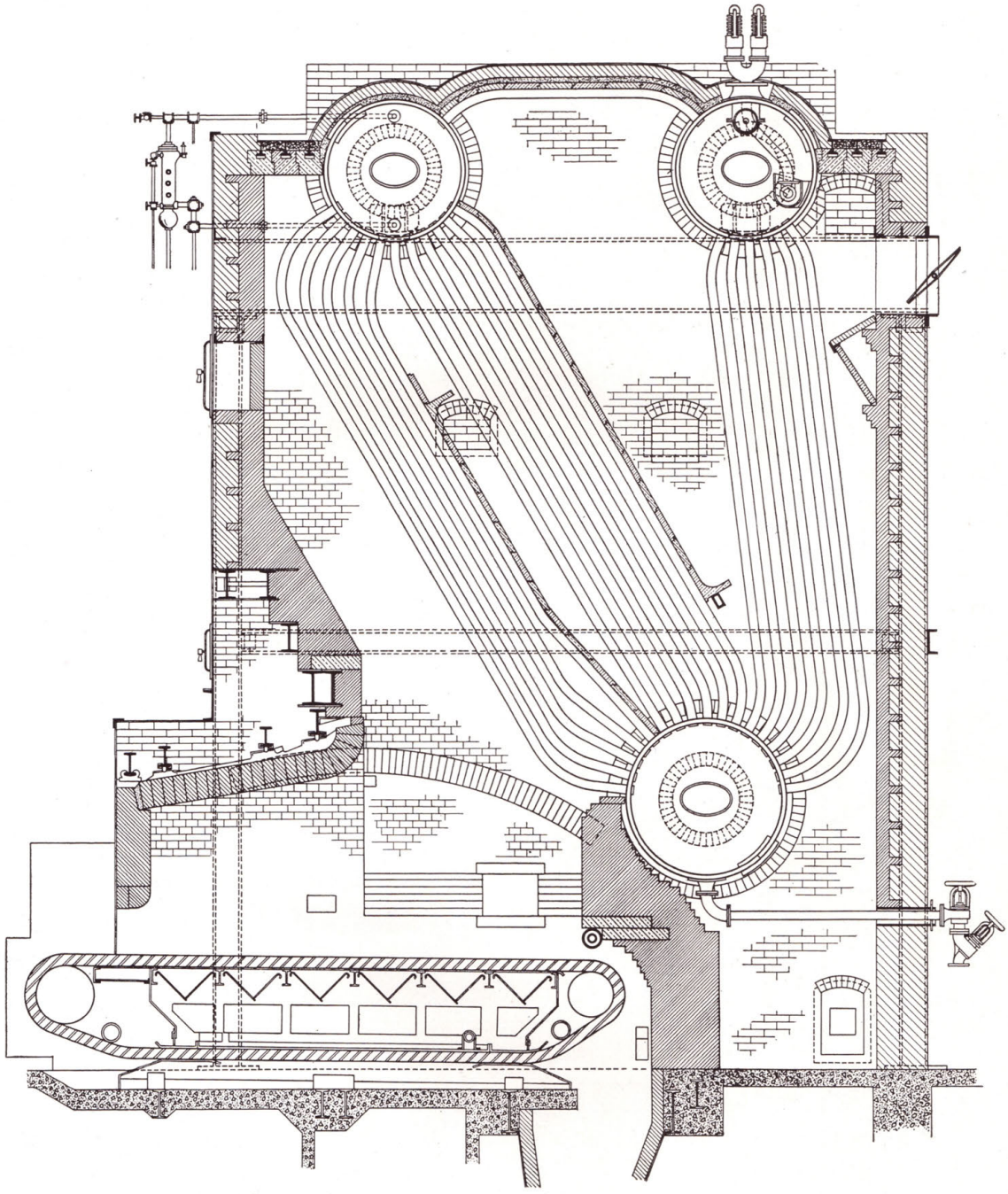


On the preceding page a cross sectional view of the two 860 H. P. Class RH Boilers installed at The Mengel Company is shown. The boiler house was designed especially to accommodate the boiler and its auxiliaries, likewise the hog fuel storage bin adjacent to it. A clear idea can be had of the location and arrangement of the water walls, the simple method of feeding the fuel at the top of the furnace and other details such as the fuel conveyor, pulverizer, superheater, air cooled walls and steam purifier. These boilers are capable of and have been operating since installed at 250% to 300% rating entirely on wood refuse. Above is shown the completed Mengel installation.

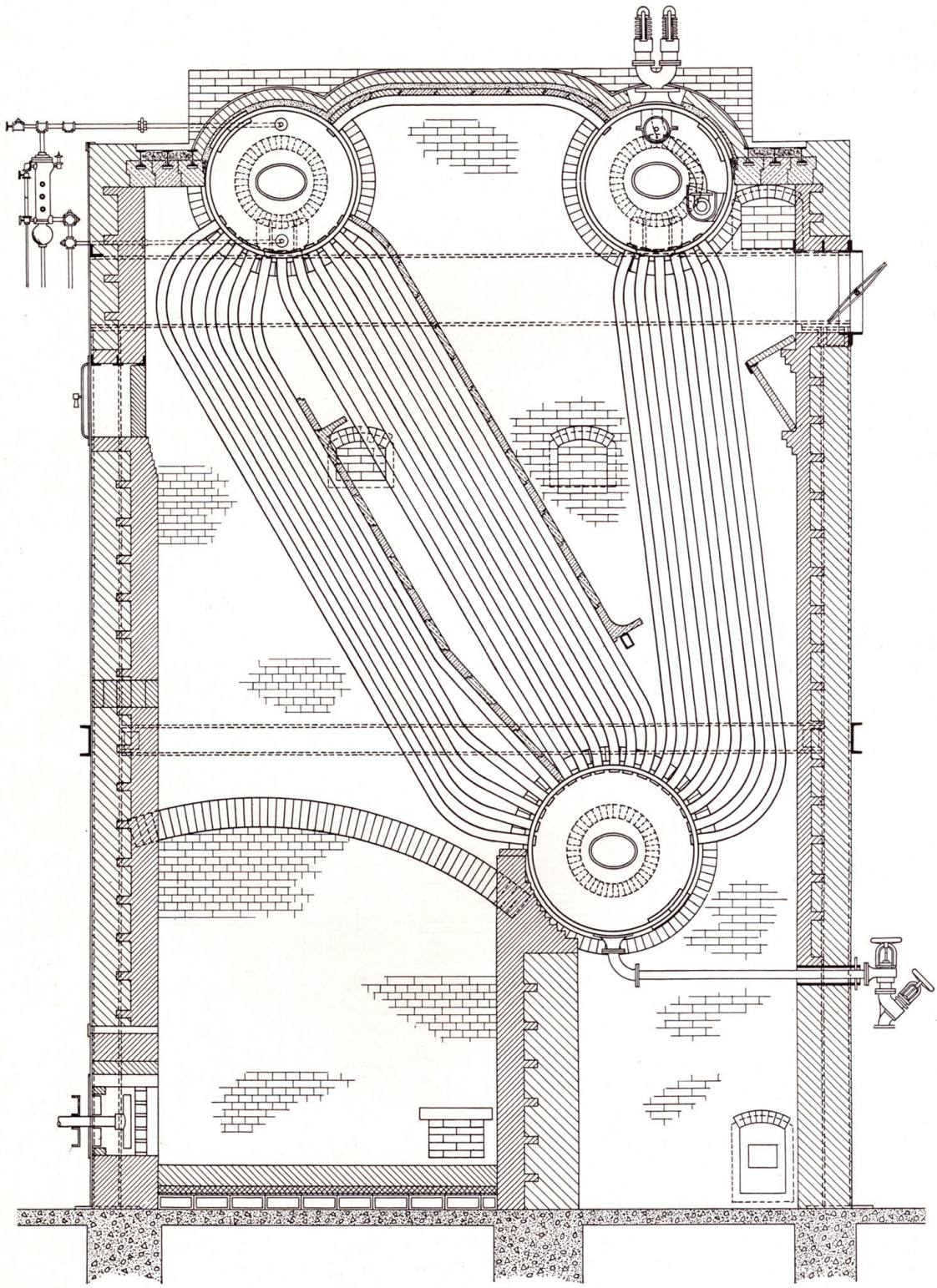
NOTE: Steam purifiers were thought necessary by the Mengel Company to handle the additional volume of steam from the water walls at high ratings. However, tests at 300% rating showed delivery of commercially dry steam at the nozzle.



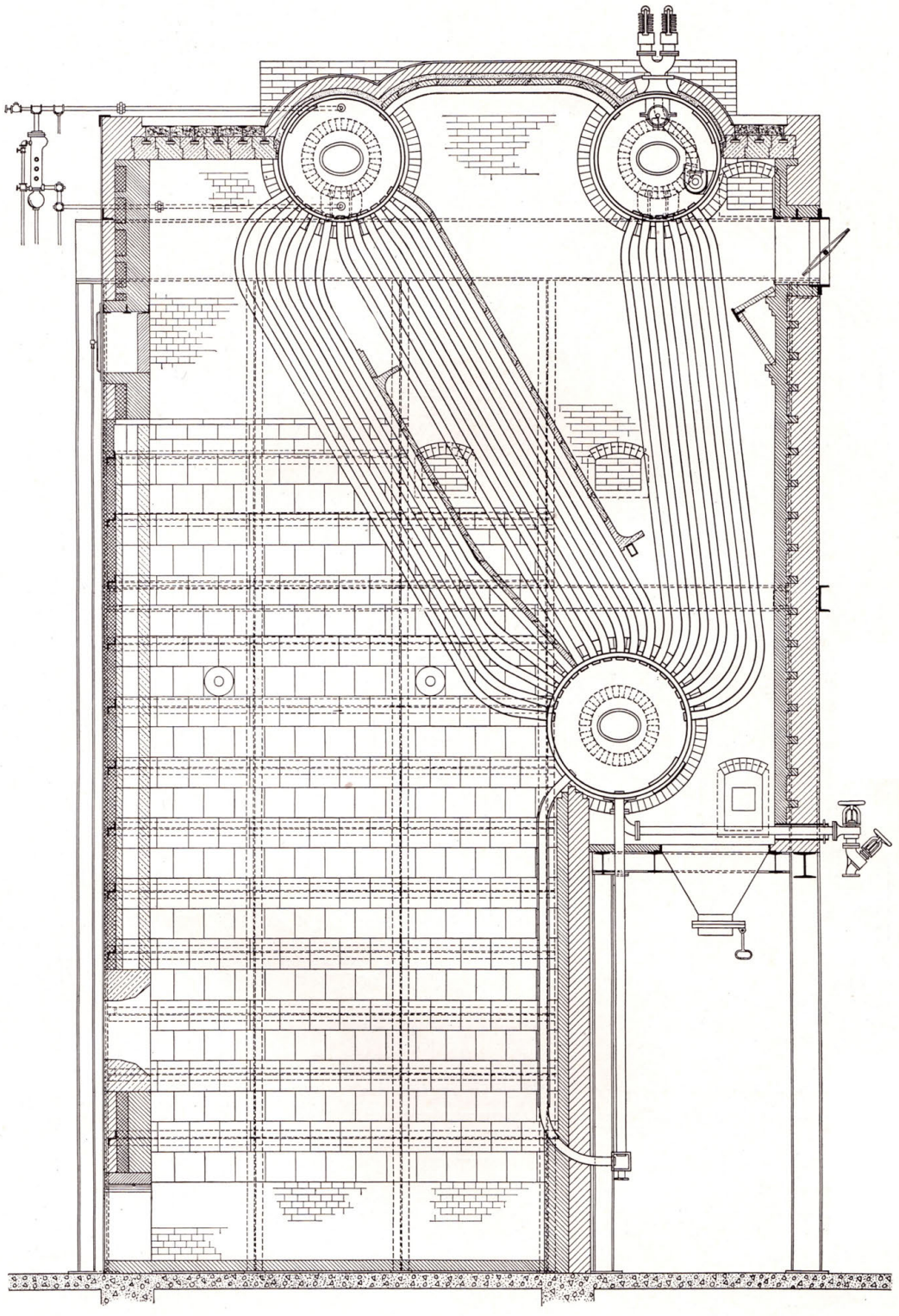
The Vogt 3 Drum Class R Boiler equipped with multiple retort underfeed stoker. The baffling may be arranged to provide for four gas passages in which event the stack outlet is located at the bottom of the setting.



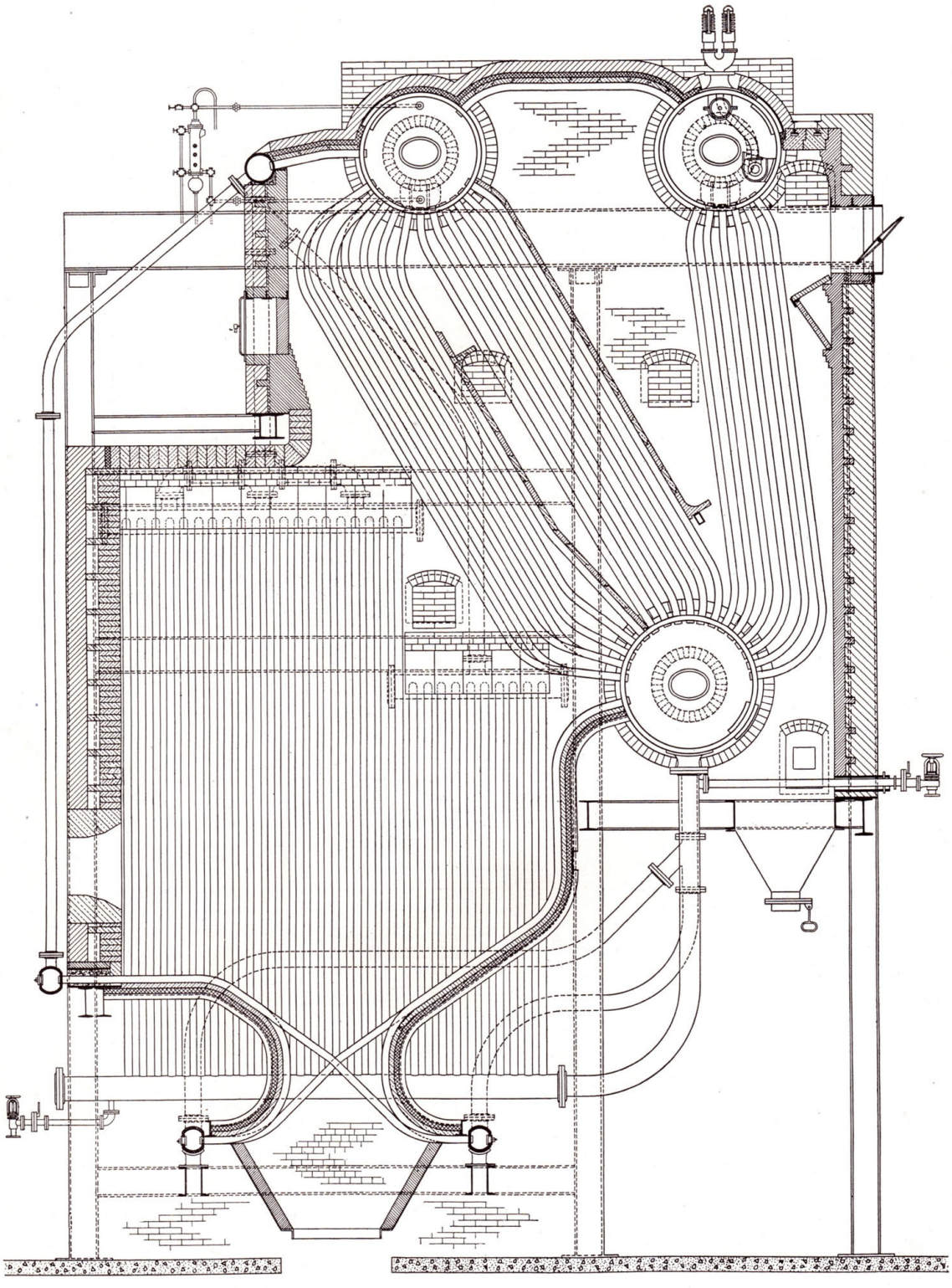
This boiler is a duplicate in design of that shown on opposite page except the furnace is arranged for a chain grate stoker. The arch arrangement can be suited to the desired furnace volume consistent with the quality of fuel used.



This boiler with furnace designed for burning either oil or gas affords, as is commonly known, a very flexible unit. The arrangement of the drums and other details is not unlike that shown on page 18 or 19.

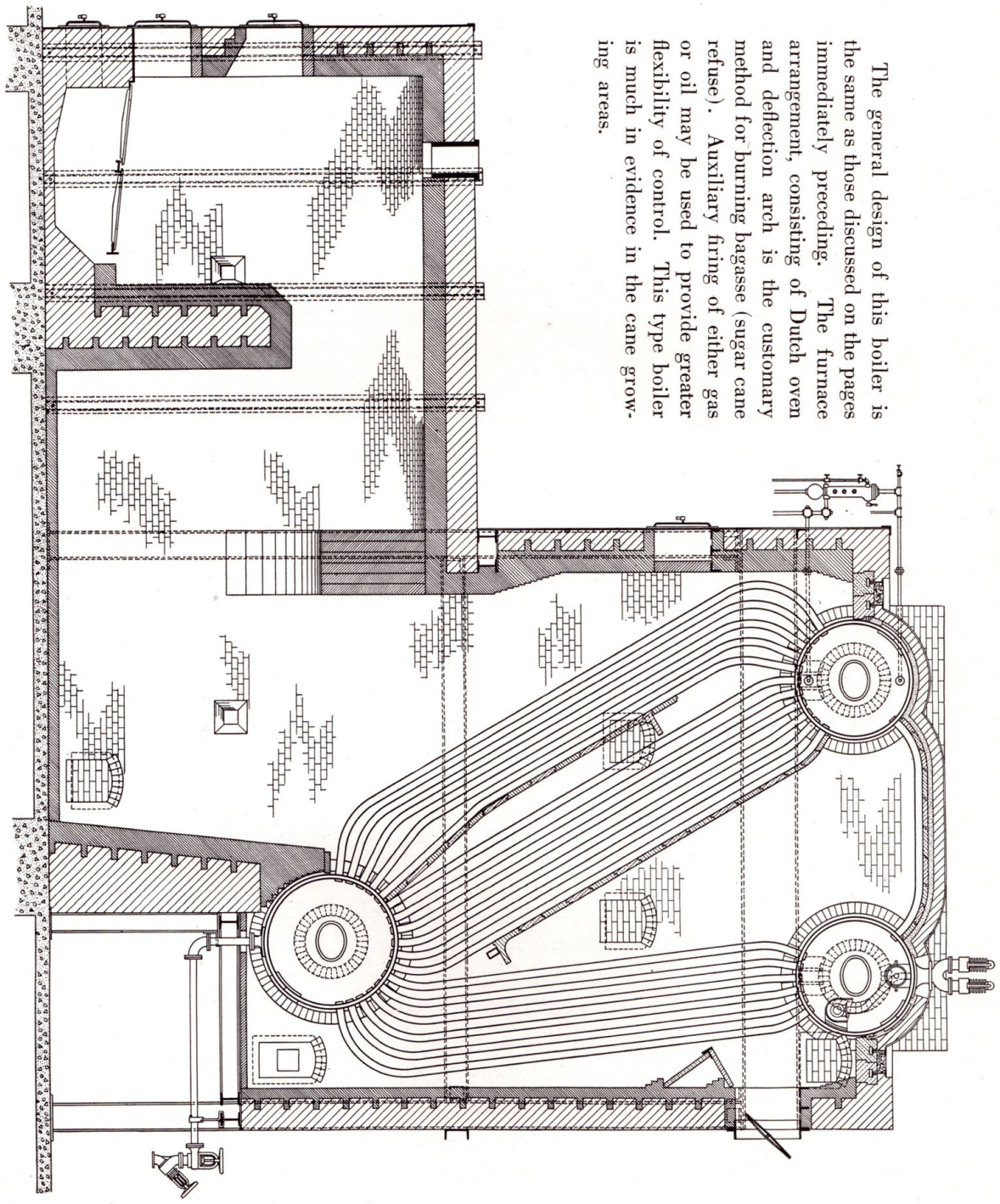


This design is a duplicate of page 20 with the exception of air cooled front and side walls and water cooled bridge wall. Note the under cut rear wall to accommodate soot hopper.



In this pulverized fuel fired design the front wall is air cooled while the side walls, also bridge wall and hopper bottom, are water cooled. This design is popular because of its flexibility of operation and maximum efficiency at high ratings.

The general design of this boiler is the same as those discussed on the pages immediately preceding. The furnace arrangement, consisting of Dutch oven and deflection arch is the customary method for burning bagasse (sugar cane refuse). Auxiliary firing of either gas or oil may be used to provide greater flexibility of control. This type boiler is much in evidence in the cane growing areas.



THE VOGT CLASS M WATER TUBE BOILER

ADVANTAGES

Delivers superheated Steam	High Efficiencies
Clean Steam	Low Draft Loss
Fast Circulation	Low Stack Temperature
Large Water Surface	Flexibility
Steady Water Level	Minimum Expansion Stresses
Long Gas Travel	Ease of Operation
High Rating	Low Maintenance

It is a well known fact that superheat increases the economy of all steam driven prime movers. It has also been repeatedly and conclusively proved that the first few degrees of superheat are by far the most important—that the gain in efficiency by the use of slightly superheated steam is many times the difference in available energy. *Only a slight superheat is necessary to eliminate the waste of drips and greatly reduce pipe line and cylinder condensation.* Then, too, as mud, silt, and foreign matter can only be carried by the moisture suspended in saturated steam, a slight superheat eliminates the carrying over of these highly abrasive solid particles which do so much damage to valves, cylinders, turbines, etc.

High ratings are common practice today but they are generally accompanied by undue loss in efficiency unless economizers or other equipment are added to increase the absorption of heat. The Vogt M Boiler will maintain its economy and efficiency at high rating. Superheated steam, continuous and natural ring flow water circulation which is unrestricted and of high velocity (the most rapid known); large water surface areas giving easy and quiet liberation of steam and a steady water level; long gas travel; cleaner tube surfaces from faster travel of water and gases, are distinguishing features of this boiler. It is adaptable to the most severe conditions and flexible in operation with high efficiency.

DESIGN—The design of the Vogt M Boiler clearly indicates why it is guaranteed to deliver superheated steam. The top steam drum and its connecting tubes are entirely above the high water level and subjected to second pass temperatures. The steam generated in the first bank of tubes and liberated in the front drum passes through the front connecting steam tubes where the entrained moisture is evaporated and superheat is added. The remainder of the steam, liberated in the rear drum, is similarly treated in the rear steam tubes.

The steam and water circuits are so arranged that a balanced pressure is always maintained in the front and rear drums insuring a steady even water level so essential to the economical generation of steam and the elimination of serious fluctuations at high ratings.

The furnace volume is large, allowing complete combustion with all kinds of fuel; the gas travel is long with baffling so arranged to give low draft losses with maximum scrubbing action of the gases on the heating surfaces, and the setting is adaptable to any method of firing or operating condition.

CIRCULATION—Few realize that circulation or the flow of water within the boiler is equally important as the circulation of gases on the fire side of the boiler.

It is quite obvious that unless the steam bubbles are removed from the tube walls as rapidly as they are formed, a decided check in capacity will result. Rapid circulation is a distinct aid to heat transmission and materially increases evaporative efficiency.

Since there are no external means to create a rapid circulation, natural means must be depended upon. It can be readily appreciated, therefore, that the proper design—that is, the arrangement and proportion of the tube banks and size and location of drums—are important factors.

All Vogt Boilers are so designed as to provide continuous and rapid circulation.

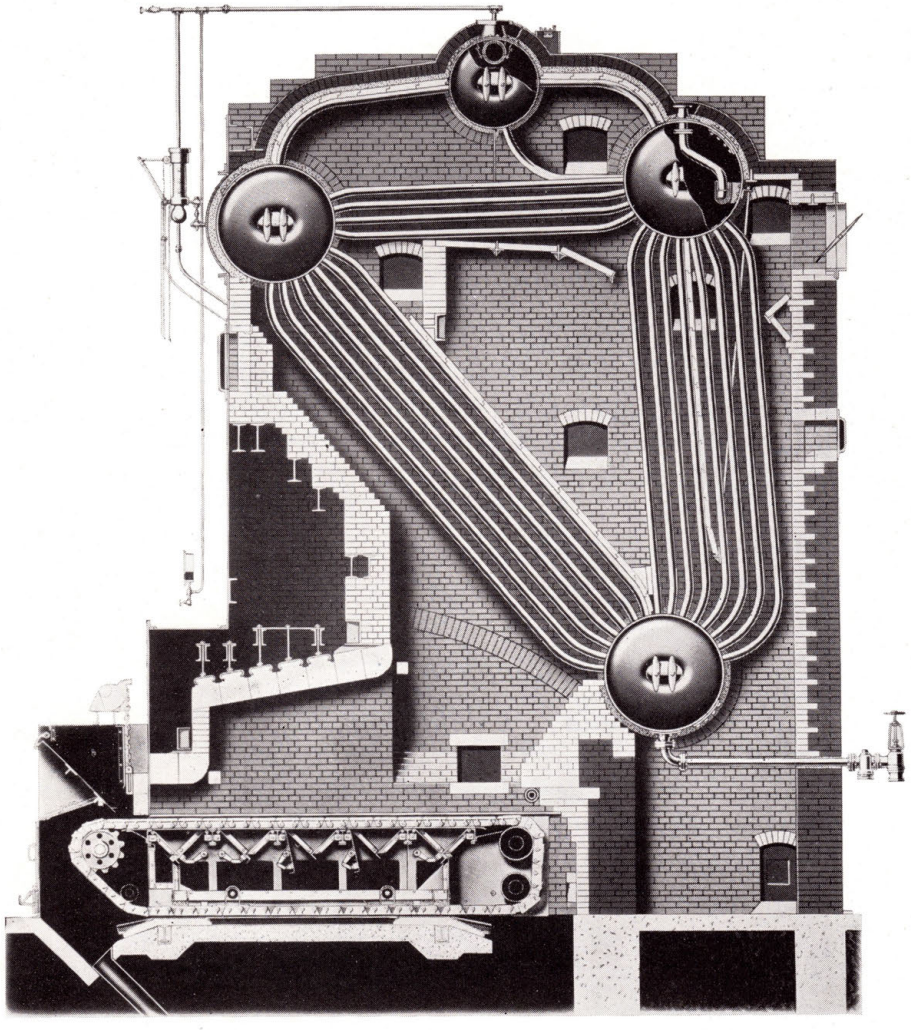
Referring to the illustration on page 26, it will be noted that the feed water enters the upper rear drum and passes downward through the mud drum, thence into the front bank of tubes. Water that passes up through the front bank of tubes unevaporated is returned downward through the rear bank of tubes to repeat its cycle.

CONSTRUCTION—The Vogt M Boiler is of simple construction, consisting of four drums and their connecting tubes. The drums are rolled from single sheets having only one longitudinal seam with double butt strap joint. All rivet and tube holes are drilled to full size in the solid plate. The tubes are all bent to the same radius on long easy curves and any tube may be removed without disturbing any other. The boiler is supported by a structural steel framework independent of the brickwork. Expansion and contraction stresses are minimized. All parts, including baffle tile and supports are easily and quickly accessible both inside and outside for inspection and cleaning.

The A. S. M. E. Boiler Construction Code is followed throughout, and the highest grade material with intelligent, conscientious workmanship in our own shops, combine to produce that quality product which gives complete satisfaction.

The Vogt Class M Boiler is not intended to replace the superheater where high degrees of superheat are required.

VOGT FOUR DRUM CURVED TUBE BOILER
CLASS MH

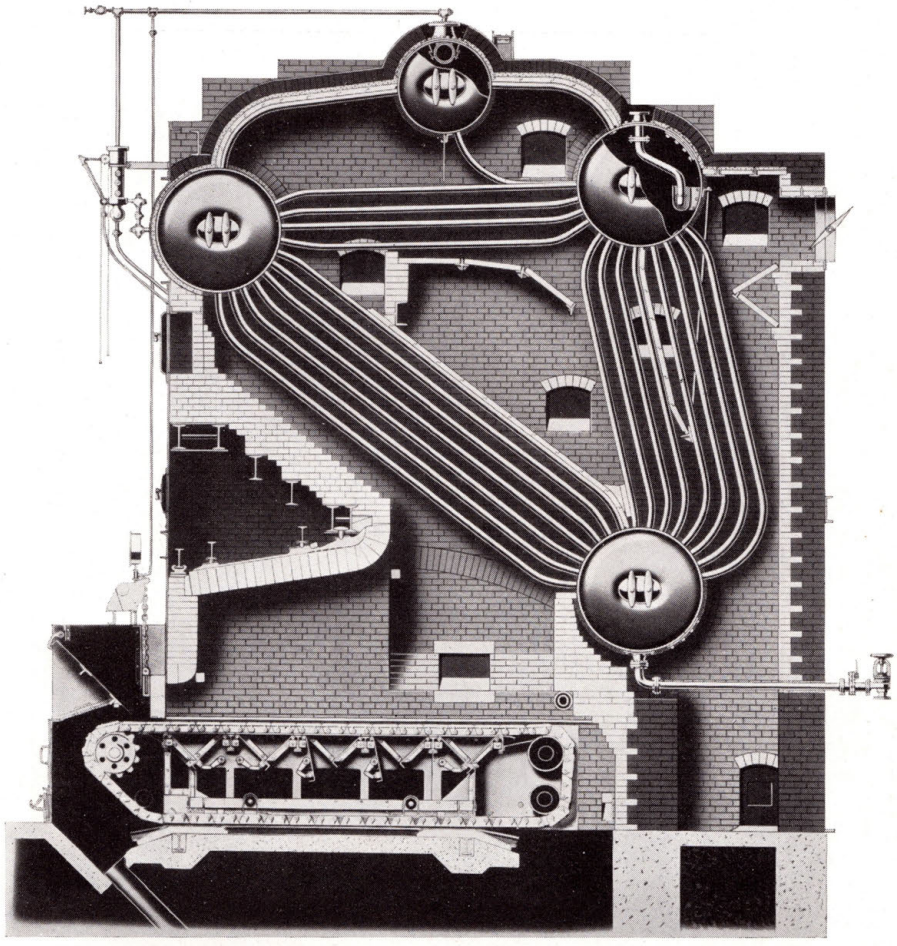


The Vogt 4 Drum Class MH Boiler is popular where a few degrees of superheat are wanted, for example, to eliminate line condensation where long steam travel is unavoidable. From the illustration it will be noted that the steam drum is entirely above the water level, likewise its connecting steam drying tubes.

This design is recommended where head room is unlimited and maximum capacity in a single setting is desired.

Tubes can be arranged to accommodate superheater

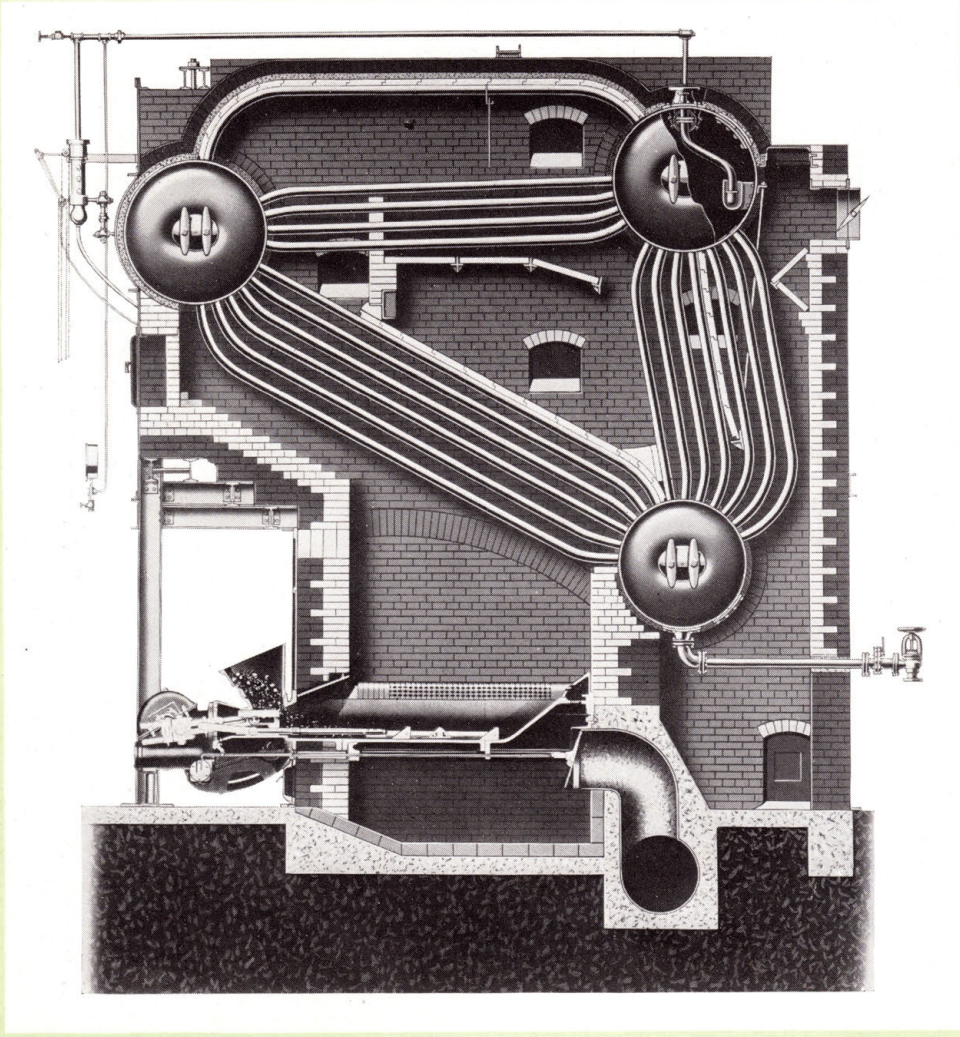
VOGT FOUR DRUM CURVED TUBE BOILER
CLASS MS



The Class MS Boiler is the standard 4 drum type and is essentially the same as the high setting described on page 26. The arrangement of the drums and tube banks are modified only to meet existing head room conditions. Its economical operation and delivery of slightly superheated steam makes it popular in the moderately rated horse power class. Any type stoker desired can be used in connection with this boiler.

Tubes can be arranged to accommodate superheater

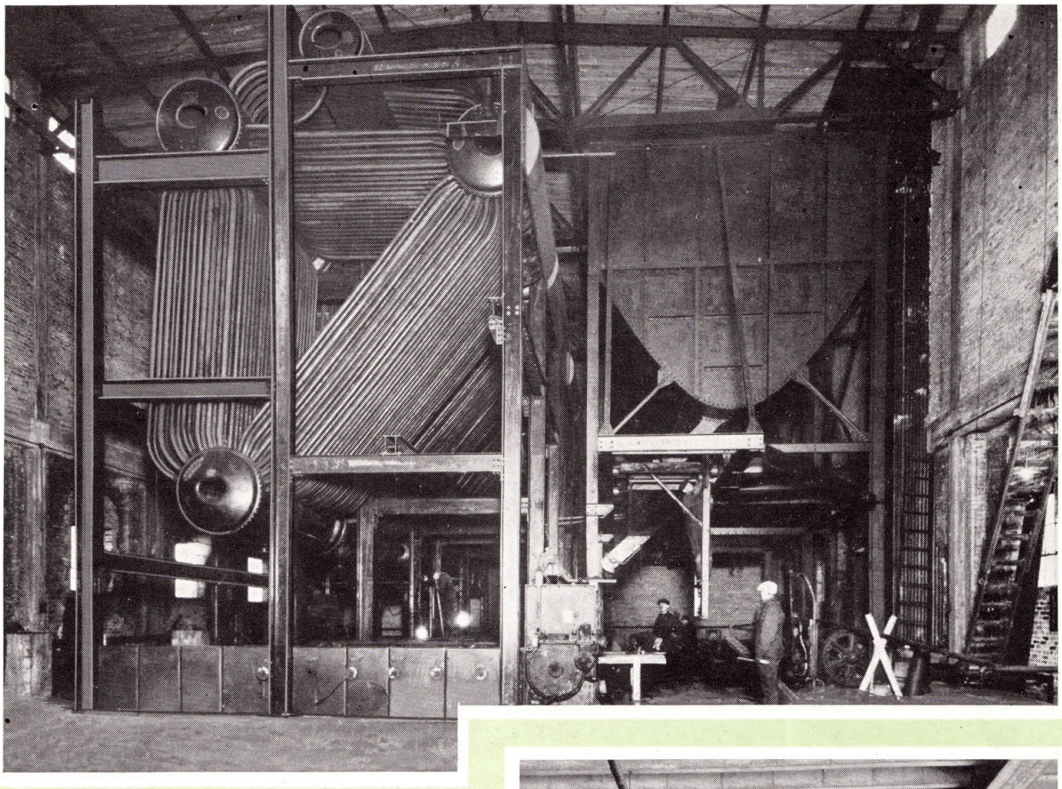
VOGT THREE DRUM CURVED TUBE BOILER
CLASS ML



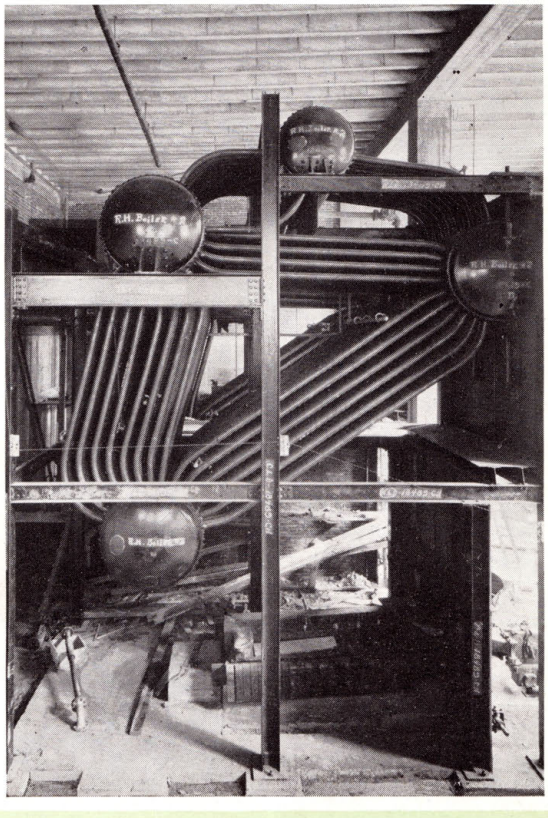
The ML Boiler is an adaptation of the MS type shown on page 27. It will be noted, however, that the upper drum is omitted to make the setting adaptable to low head room conditions. The steam is taken from the upper rear drum after first passing through steam drying tubes. Because of the ring flow circulation in this boiler exceptionally high ratings are possible.

Any type stoker desired can be used in connection with this boiler.

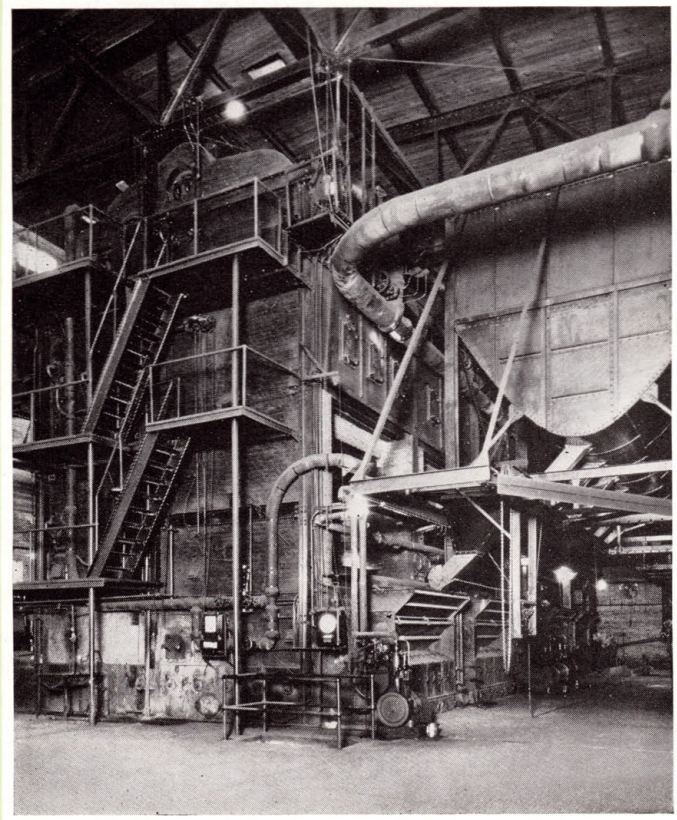
Tubes can be arranged to accommodate superheater



The Chicago & Northwestern Railroad use four Vogt 500 H. P. Class MH Boilers for steaming up 72 locomotives preparatory to their runs handling the heavy Chicago suburban traffic.

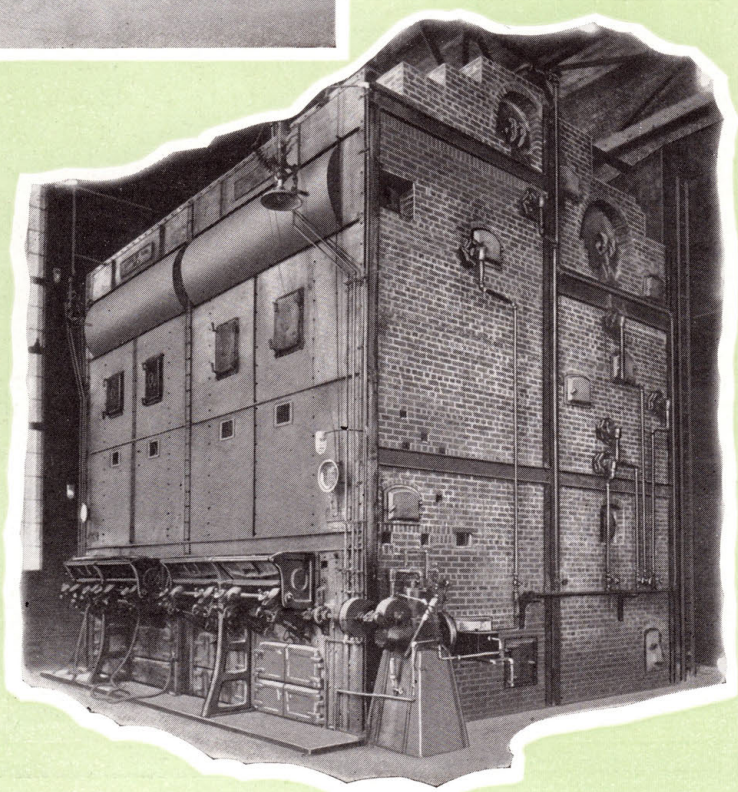


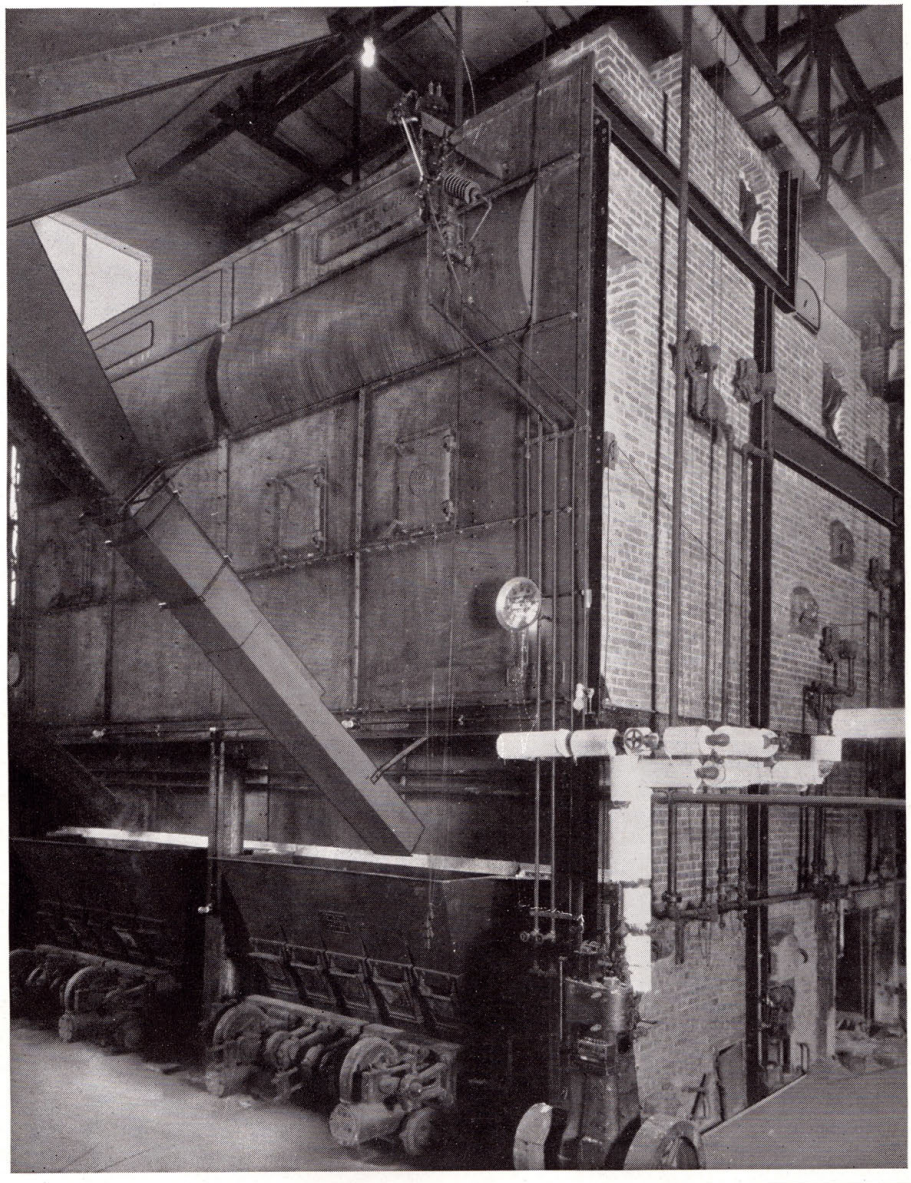
Two 300 H. P. Class MS-648 Vogt Boilers were ideally adapted to every requirement in the architects specifications at the Western Junior High School for Girls at Louisville.



The new boiler room of the Chicago & Northwestern Railroad is one well worthy of example, not only from an economical viewpoint, but for compactness and appearance as well. The four 500 H. P. Class MH Boilers are shown on preceding page during erection.

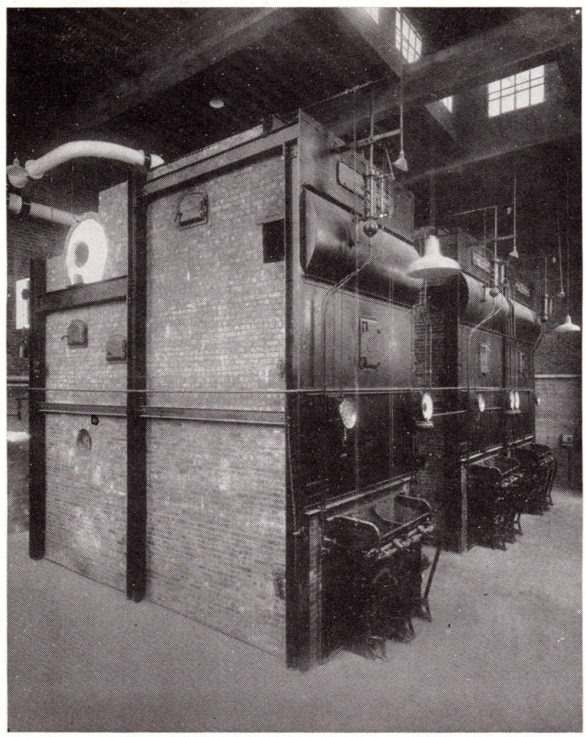
Prisoners at the London, Ohio Prison Farm will be comfortable during the winter months since the installation of two Vogt 400 H. P. Class MS Boilers. Steam for power and other purposes about the institution is also supplied by these boilers.





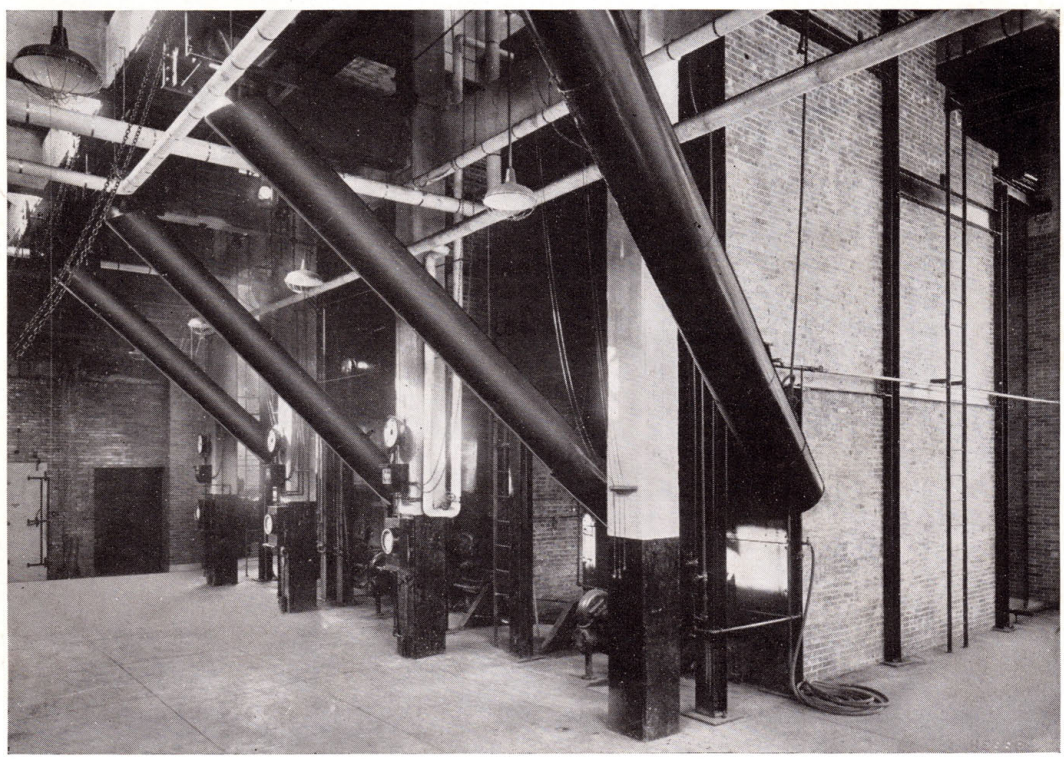
These two 400 H. P. Class MS 4 Drum Boilers in battery setting have recently gone into service at the Massillon State Hospital, Massillon, Ohio.

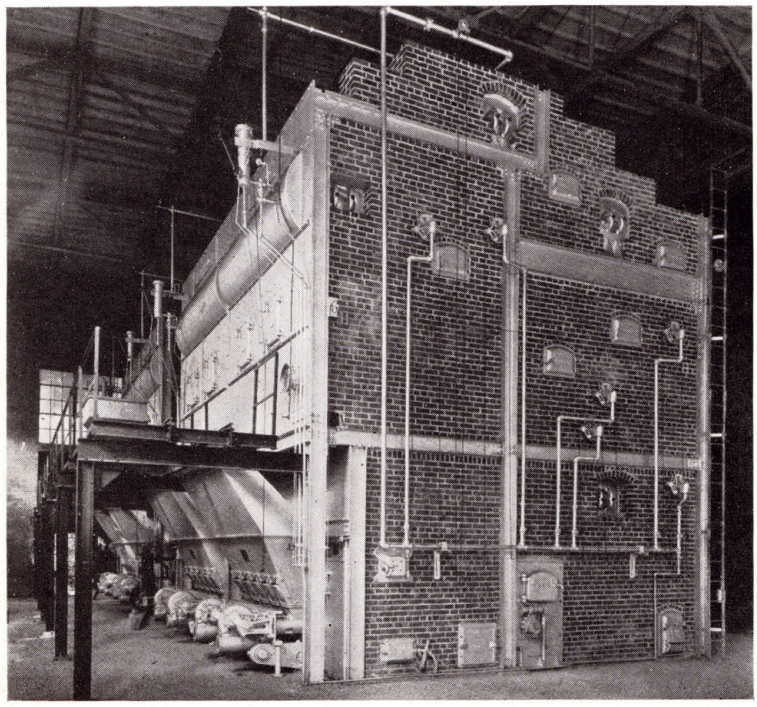
During tests made by the State's Experts, these boilers performed beyond all specified requirements of the engineers, The Jos. L. Skeldon Engineering Company of Toledo, Ohio.



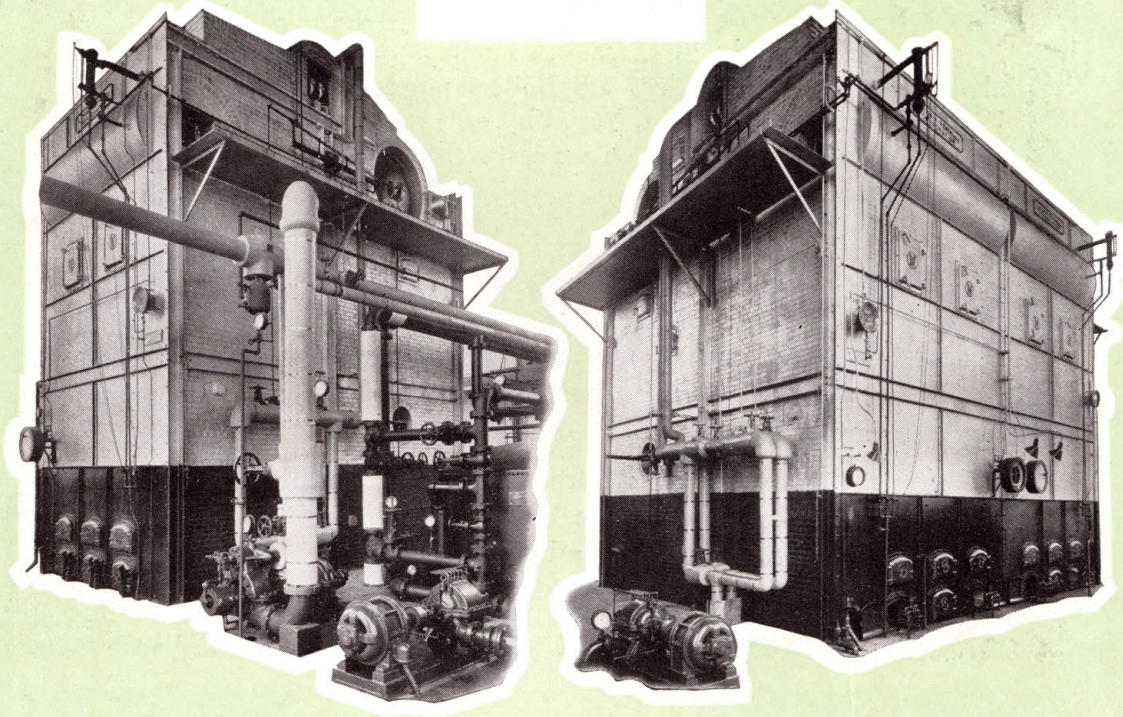
At the Southern Baptist Theological Seminary in Louisville three 165 H. P. Class ML Boilers generate steam for power and heating.

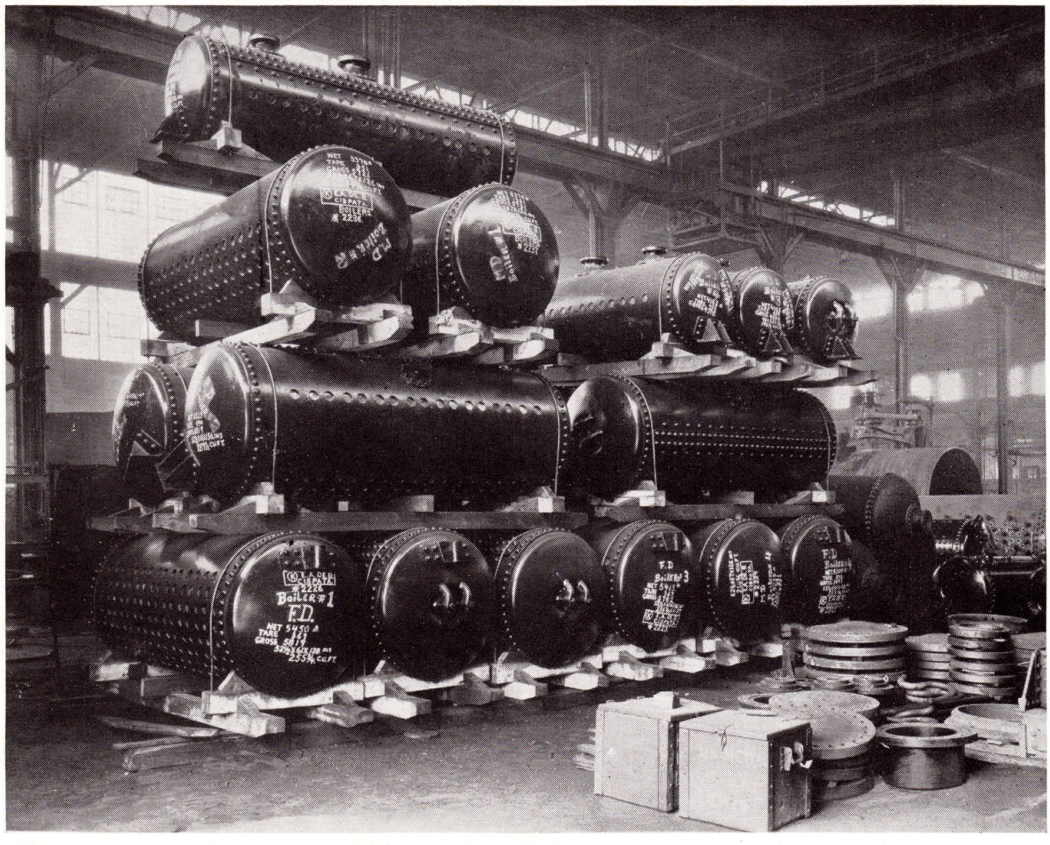
Three 200 H. P. Class MH Boilers are ideally suited for supplying slightly superheated steam over a widely scattered area at the Masonic Widows and Orphans Home, St. Matthews, Ky.





ABOVE: Four 400 H. P. Class MH Boilers with multiple retort stokers at the Institution for Feeble Minded, Columbus, Ohio. BELOW: Latonia Refining Corp., Latonia, Ky. (subsidiary of Standard Oil Co. of Ohio). Here three 400 H. P. Class MS Oil Fired Boilers are giving splendid results.

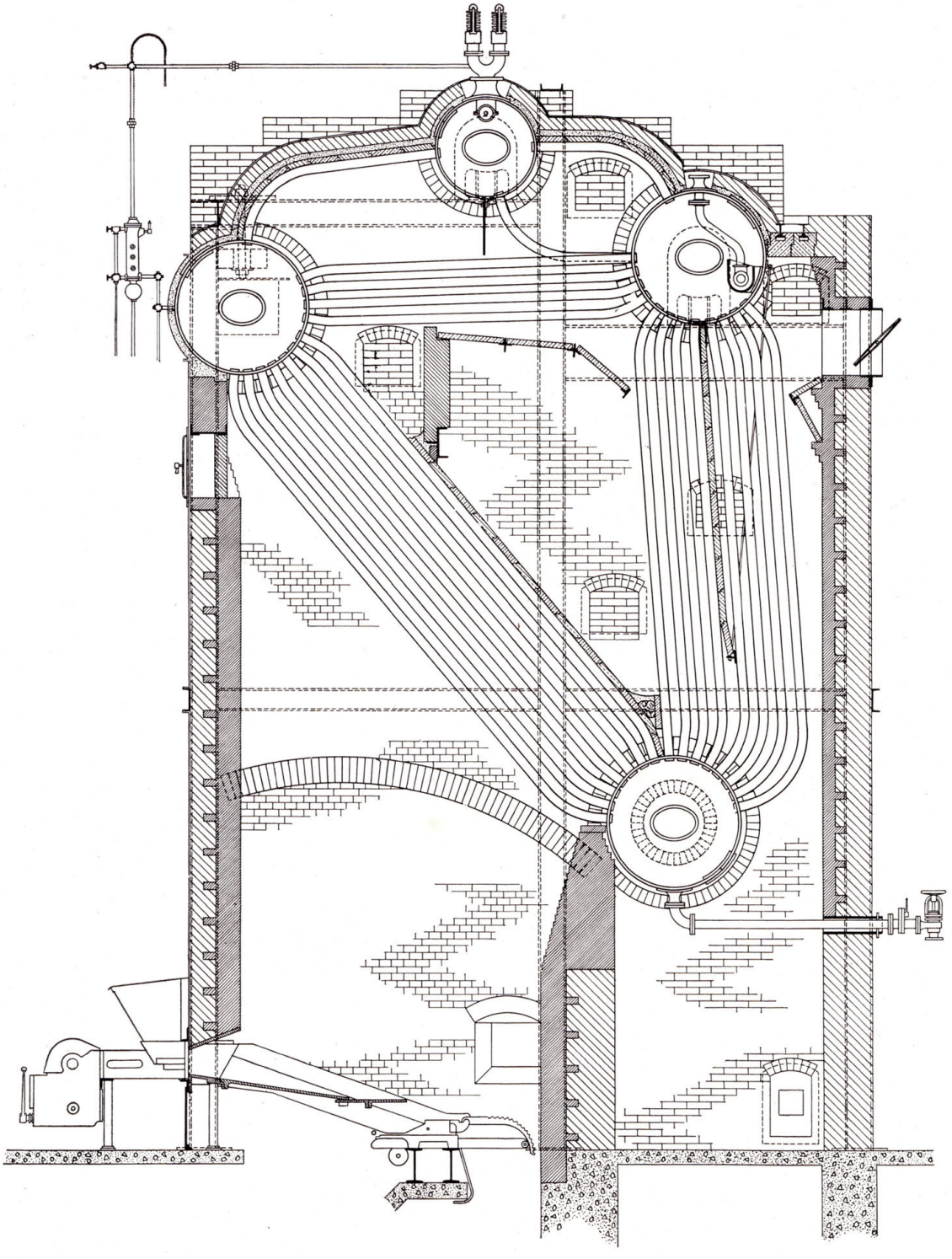




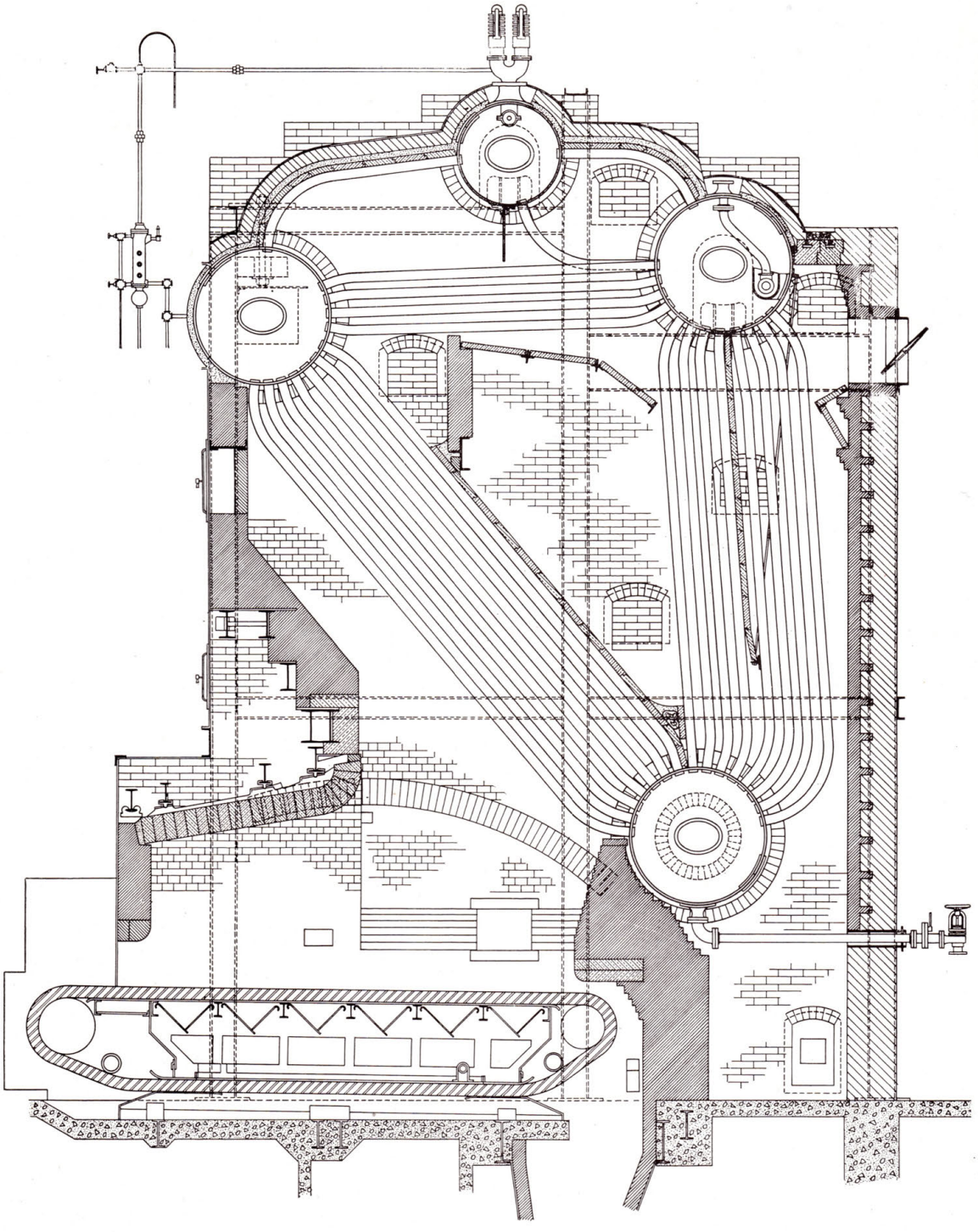
Ready for export to Cispate, Columbia, South America. The above four 385 H. P. Class MS Boilers purchased by The Kelvin Engineering Company of New York City, will be equipped with bagasse burning furnaces like shown on page 40.

On the pages preceding, illustration is given to only a few of the more recent installations of Class M Boilers to indicate their diversified application. Refineries, institutions, railroads, general industrial concerns, and many others are satisfied users.

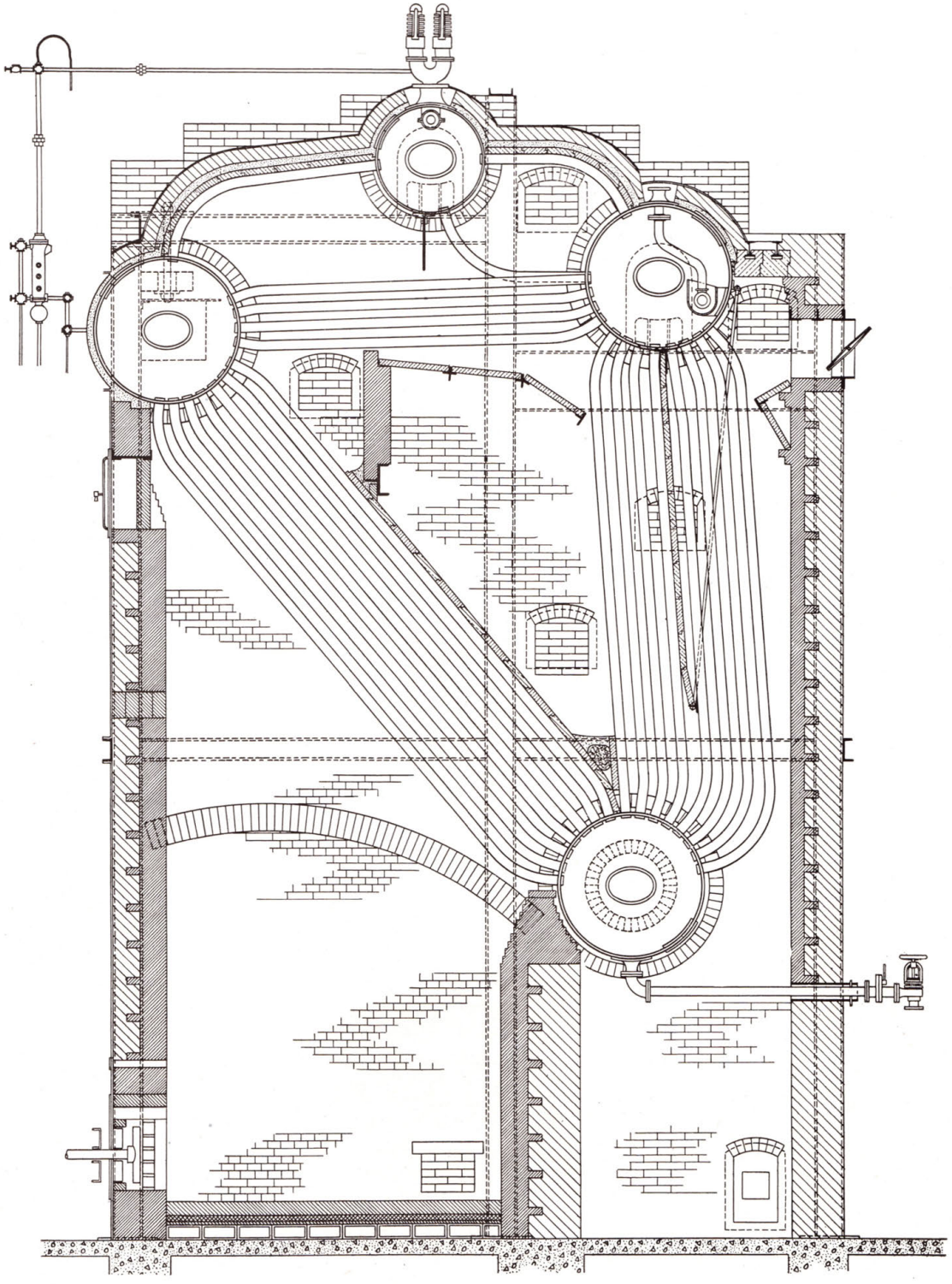
A few of the pages following are devoted to line drawings to indicate the various methods of firing applicable to the Class M Boiler. Substitution of any other method of firing can be made as well as slight modification of the setting to meet purchasers individual requirements.



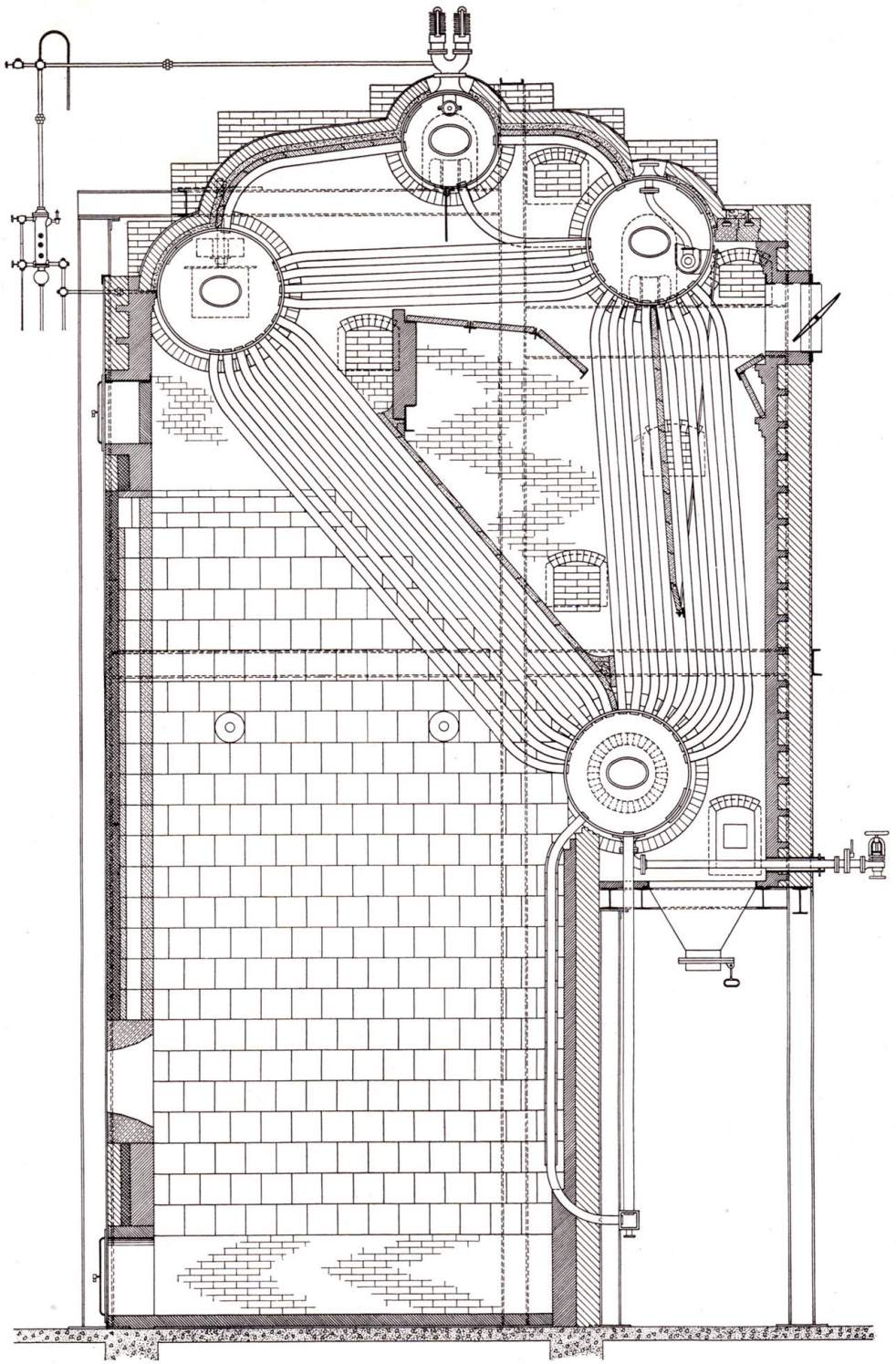
The Vogt Class M Four Drum Boiler is baffled to provide complete distribution of the gases to all tube surfaces. The ring flow principle of water circulation is a feature of this boiler which together with a fourth or steam drying drum enables it to produce steam superheated as high as 30 degrees F.



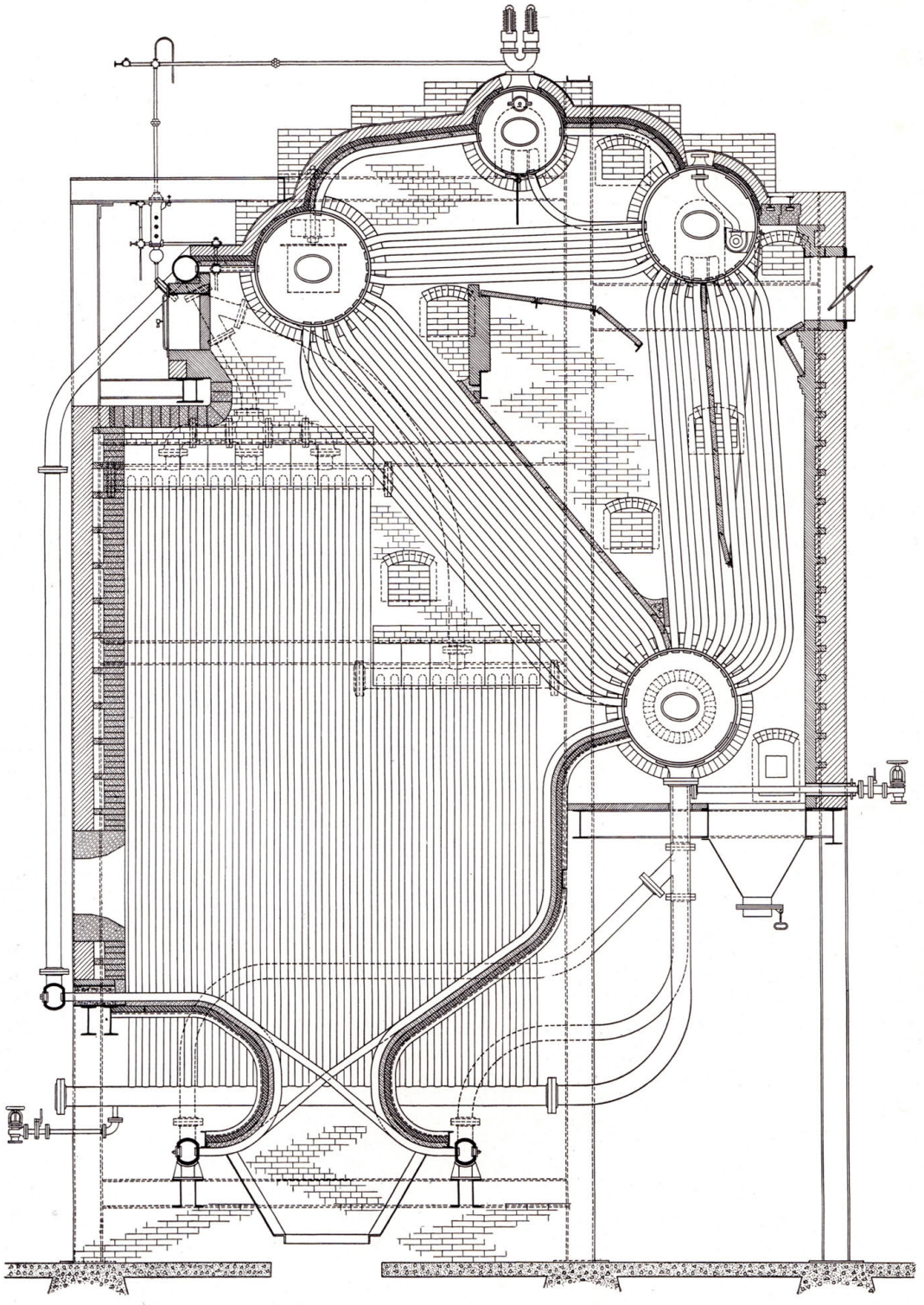
The boiler here illustrated is a duplicate of that shown on preceding page except the furnace is arranged for chain grate stoker firing. The combustion arch can be suited to the desired furnace volume consistent with the quality of fuel used.



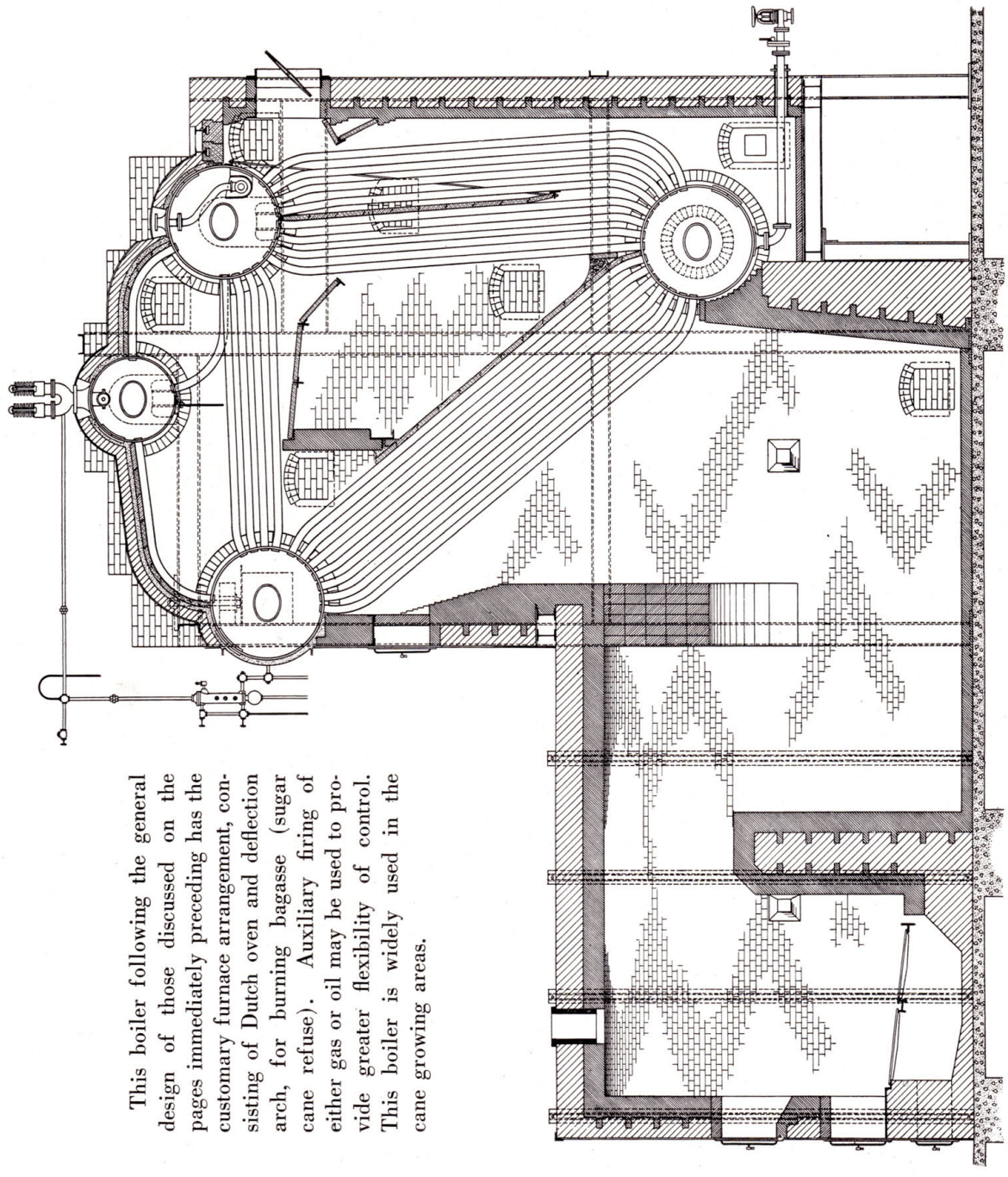
This boiler with details not unlike those shown on pages 35 and 36 has a furnace designed for burning either oil or gas and affords, as is commonly known, a very flexible unit. This setting is adaptable to firing from the rear.



This design is a duplicate of that shown on page 37 with the exception of air cooled front and side walls. The bridge wall is armor clad water cooled to prevent refractory replacement where flame impingement occurs.

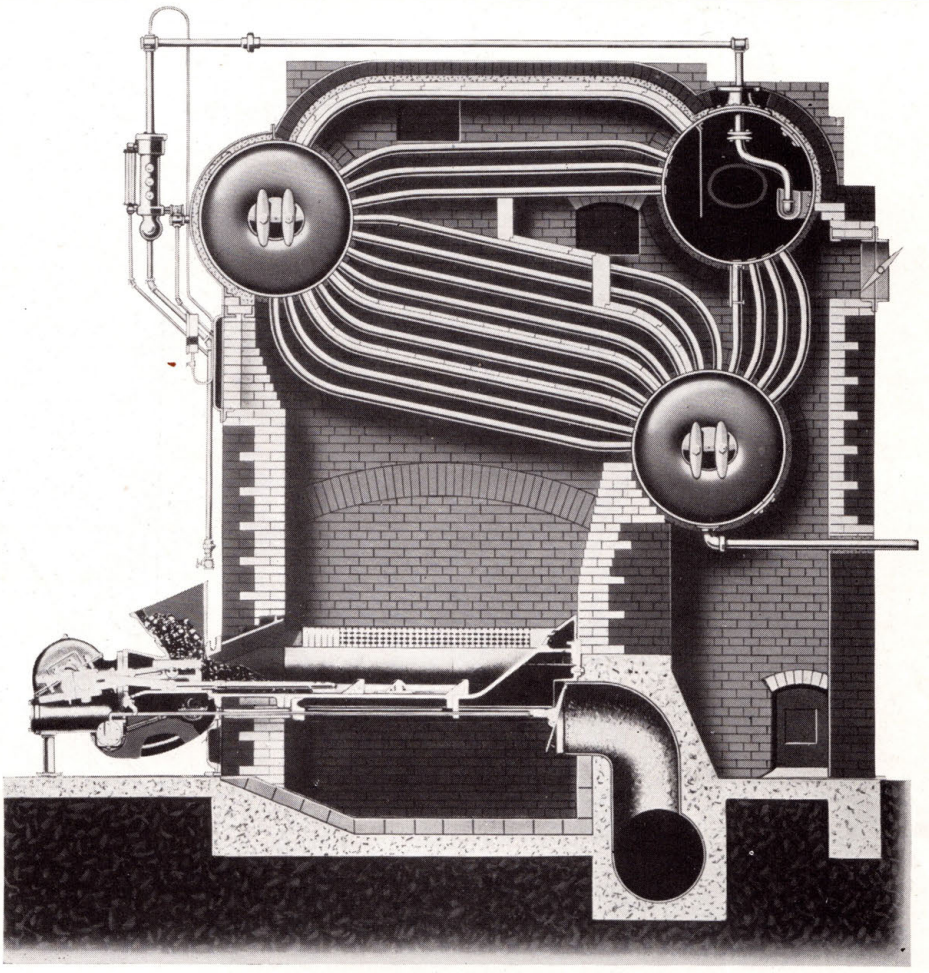


In this design for pulverized fuel firing the front wall is air cooled while the side walls, also bridge wall and hopper bottom, are water cooled. This design is popular because of its flexibility of operation and maximum efficiency at high ratings.



This boiler following the general design of those discussed on the pages immediately preceding has the customary furnace arrangement, consisting of Dutch oven and deflection arch, for burning bagasse (sugar cane refuse). Auxiliary firing of either gas or oil may be used to provide greater flexibility of control. This boiler is widely used in the cane growing areas.

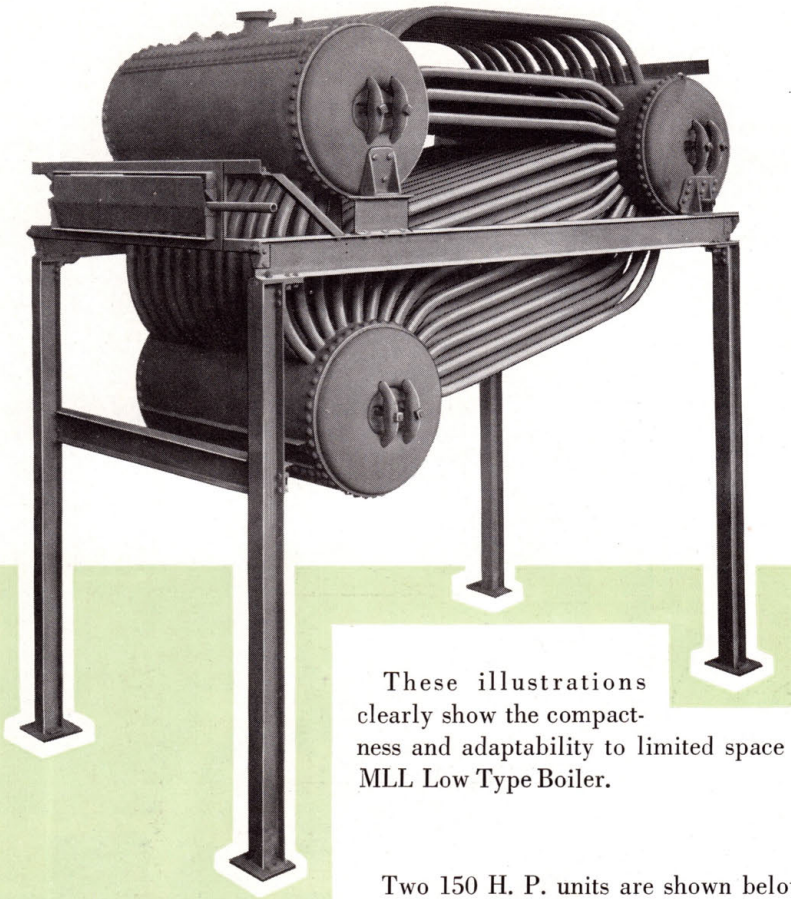
VOGT LOW HEAD TYPE CURVED TUBE BOILER
CLASS MLL



The Vogt Class MLL Low Type Boiler has been developed in answer to the demand for a small compact water tube boiler that will provide maximum capacity in limited floor space and head room.

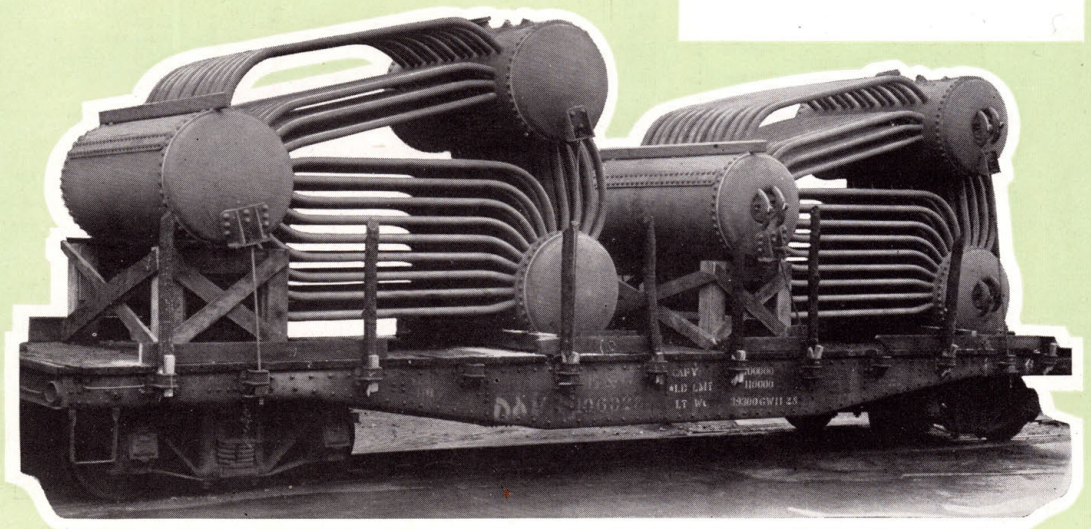
When a small economical boiler is required for heating or power, the Vogt Class MLL Low Type will adequately meet the need. The setting and furnace design can be arranged to suit any method of firing using any fuel. The maximum ratings recommended for this boiler depend on the operating pressure and vary from 100% to 250%.

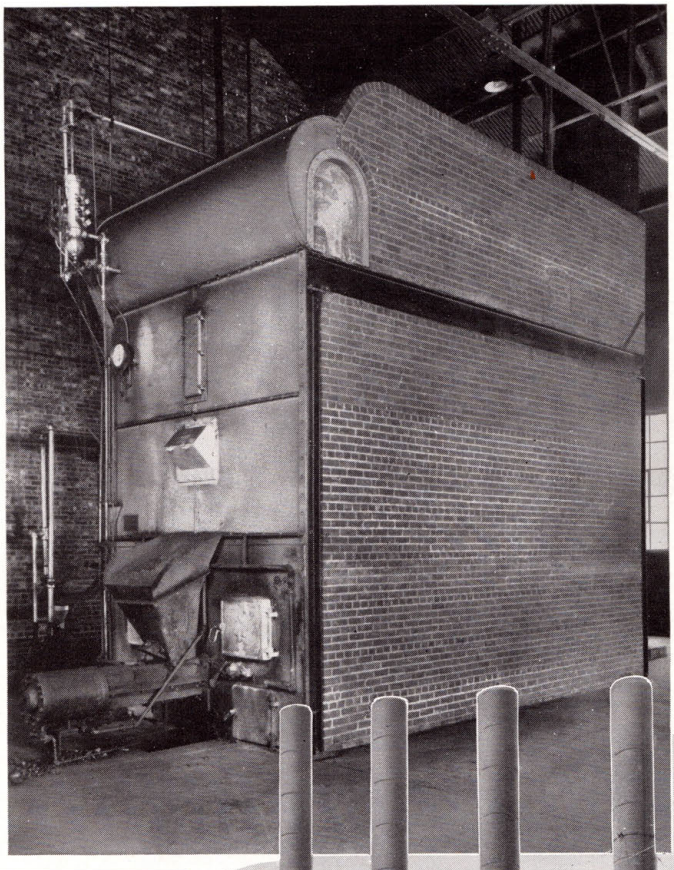
Tubes can be arranged to accommodate superheater



These illustrations clearly show the compactness and adaptability to limited space of the Class MLL Low Type Boiler.

Two 150 H. P. units are shown below assembled ready for shipment to Empire Refineries at Arkansas City, Arkansas.

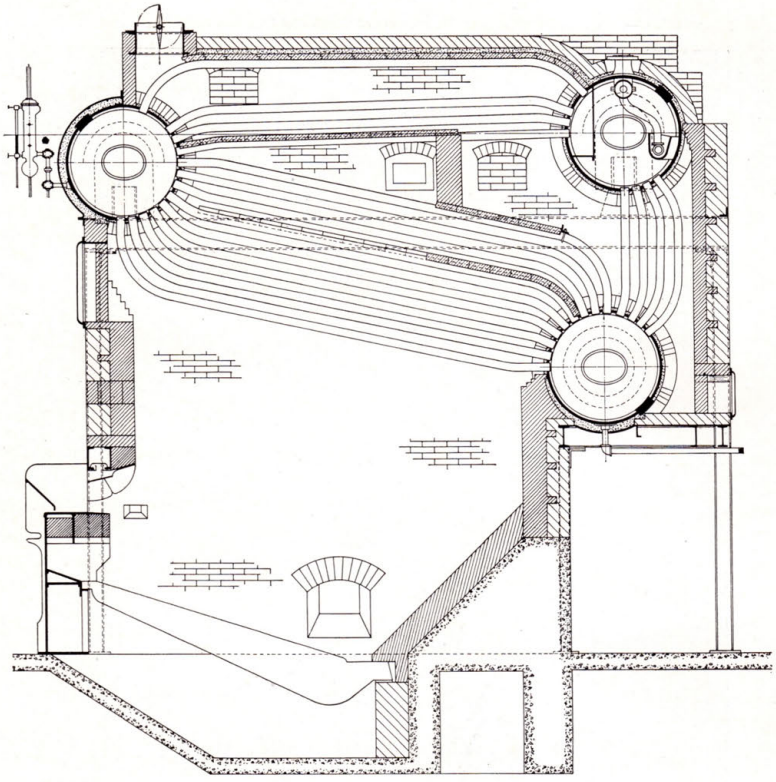


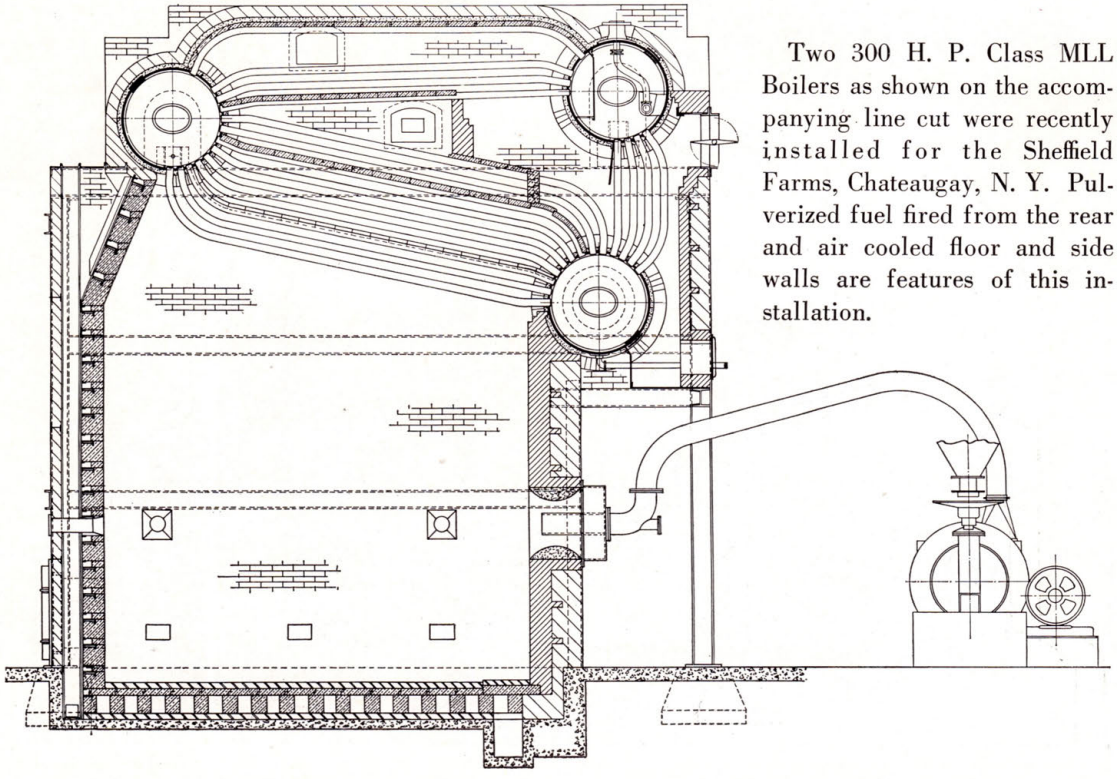


The Brown Lumber Co., Highland Park, Ky. recently installed this 250 H. P. Class MLL Low Type Boiler to supply steam for their wood preserving process.

BELOW: Five 160 H. P. Class MLL Low Type Boilers being erected at Phillips Petroleum Co., Oklahoma City, Okla. These boilers were shipped assembled ready to mount on oil burning furnaces.

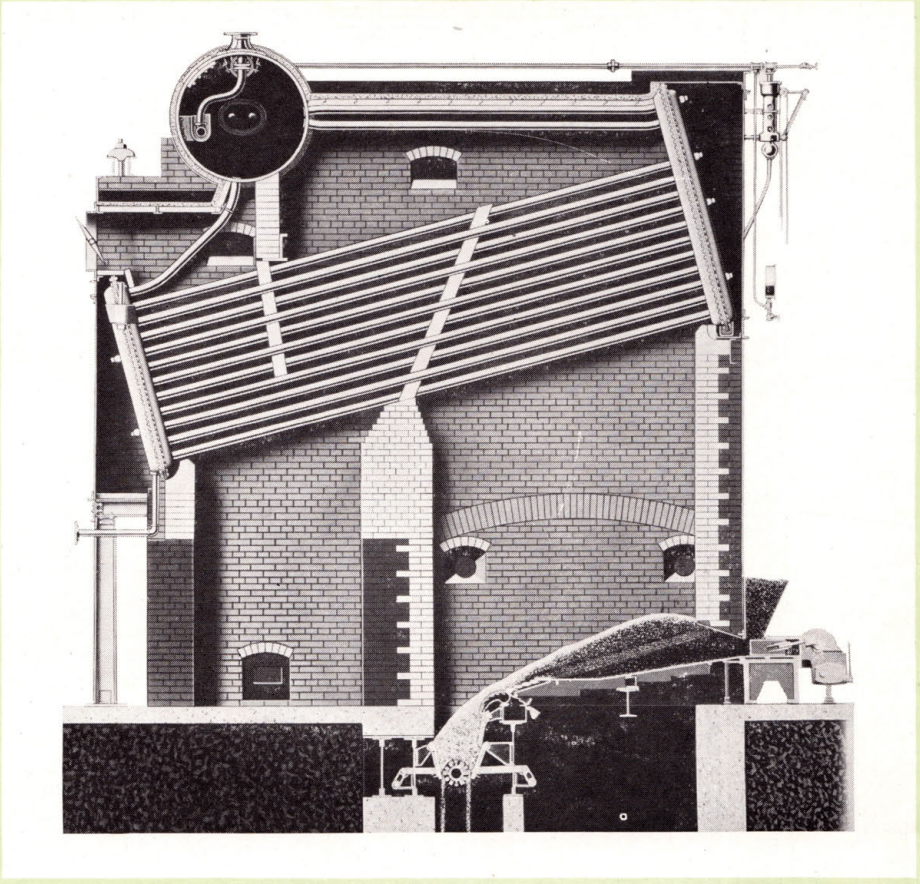
The Mengel Company at Louisville are operating one 250 H. P. Class MLL Boiler recently installed to replace a return tubular type. The line drawing here illustrated is a duplicate of the setting and shows the arrangement of the baffles when the stack outlet is located in front. The existing ash pit and foundations were utilized.





Two 300 H. P. Class MLL Boilers as shown on the accompanying line cut were recently installed for the Sheffield Farms, Chateaugay, N. Y. Pulverized fuel fired from the rear and air cooled floor and side walls are features of this installation.

VOGT STRAIGHT TUBE CROSS DRUM BOILER
CLASS S



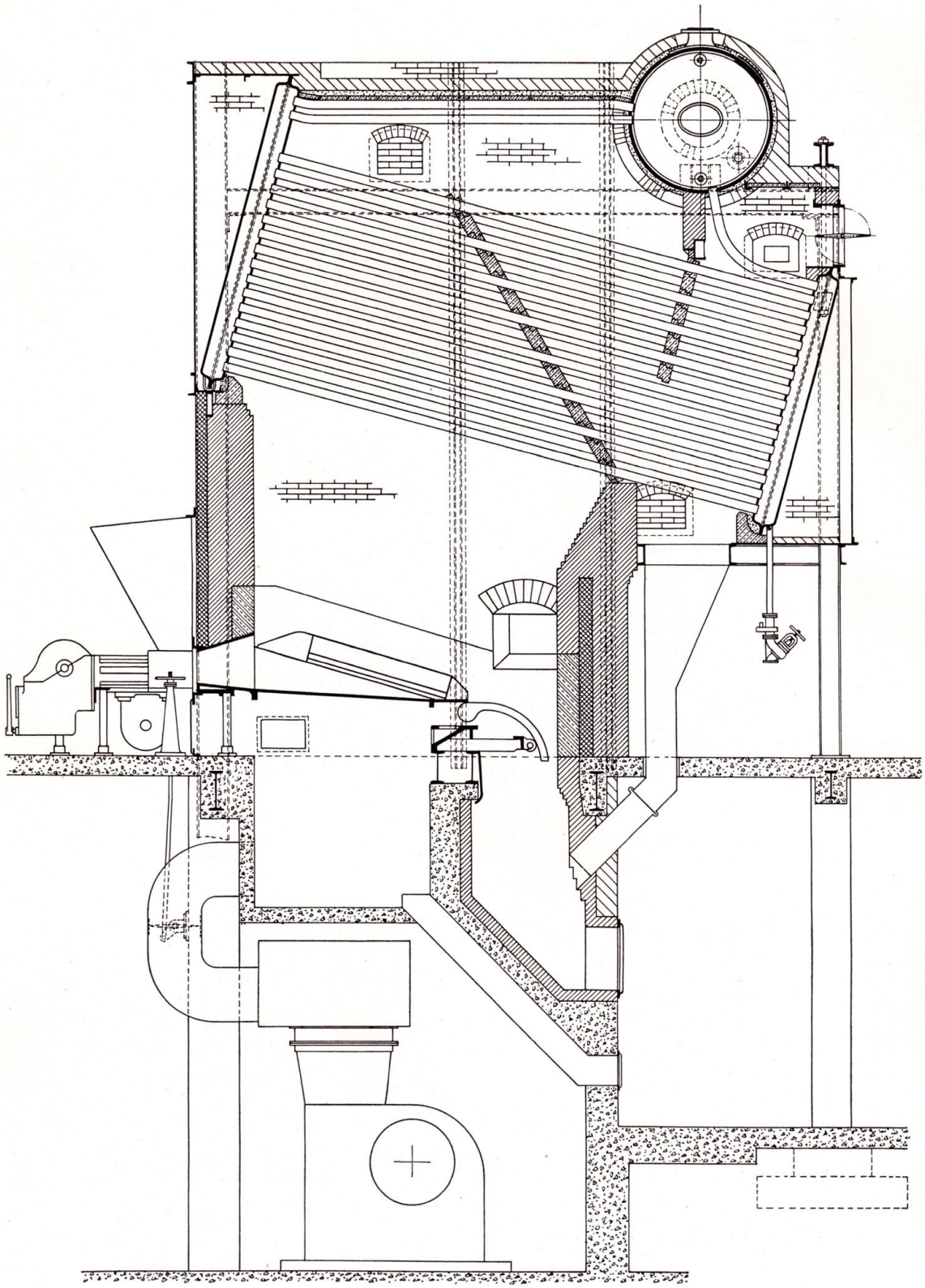
Vogt Class S Cross Drum Boilers consist of pressed steel headers and one cross drum with interconnecting tubes. Drop forged steel handhole plates of the inside bearing type are provided opposite the ends of the tubes.

All tubes are 3½" in diameter and of seamless steel quality. They are pitched 15 degrees and vertically staggered thereby exposing the greatest amount of heat absorbing surface.

The baffling is designed for three vertical passes causing constant impinging of the gases on every tube. For special installations horizontal baffles may be installed or a combination of horizontal and vertical baffles may be used, with the same degree of efficiency. On account of the location of the drum the boiler may be baffled for either a top or rear wall smoke outlet. The furnace may be arranged to suit any fuel or method of firing.

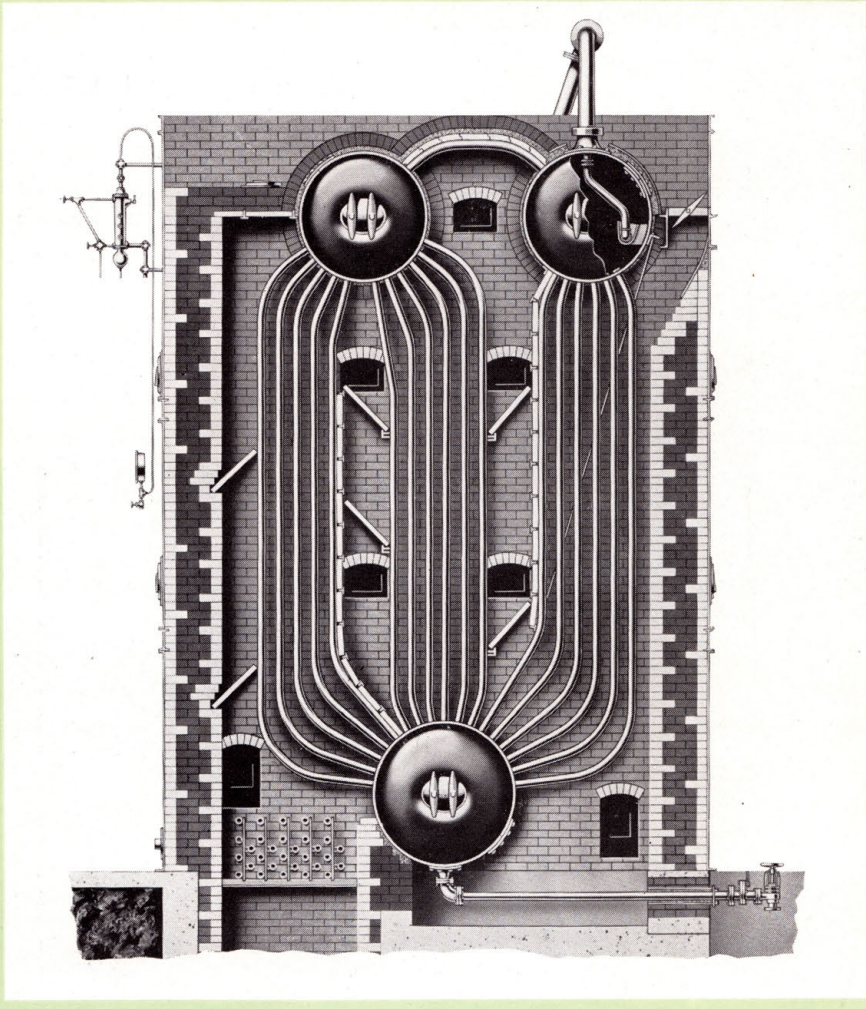
The boilers are supported by a steel framework entirely independent of the brick setting, which permits expansion without undue strains and stresses. Front and rear doors for access to the handhole plates are supported by this framework. For restricted floor space or exceptionally wide boilers, these doors are sectionalized for convenience in handling.

Built in strict accordance with the A. S. M. E. Boiler Construction Code and individual state laws

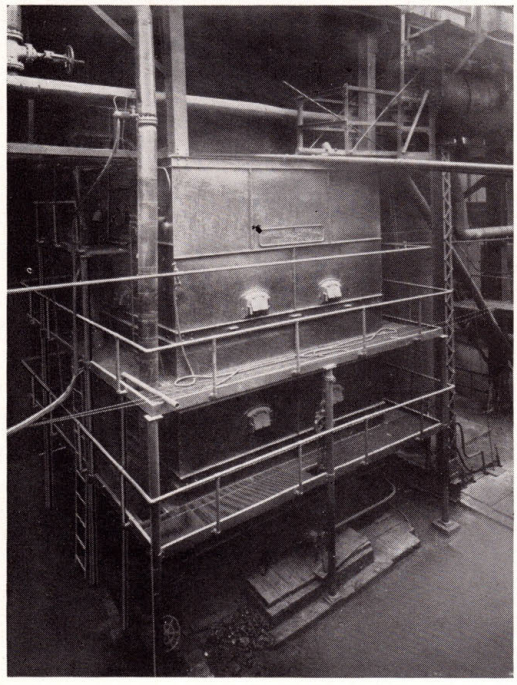


The above cross sectional view is one of two 420 H. P. units erected at Duke University, Durham, N. C.

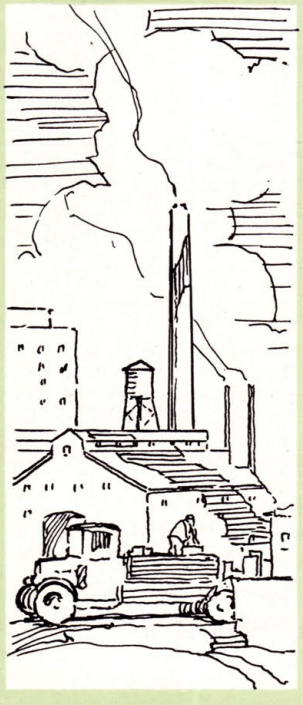
VOGT WASTE HEAT BOILER
CLASS WH

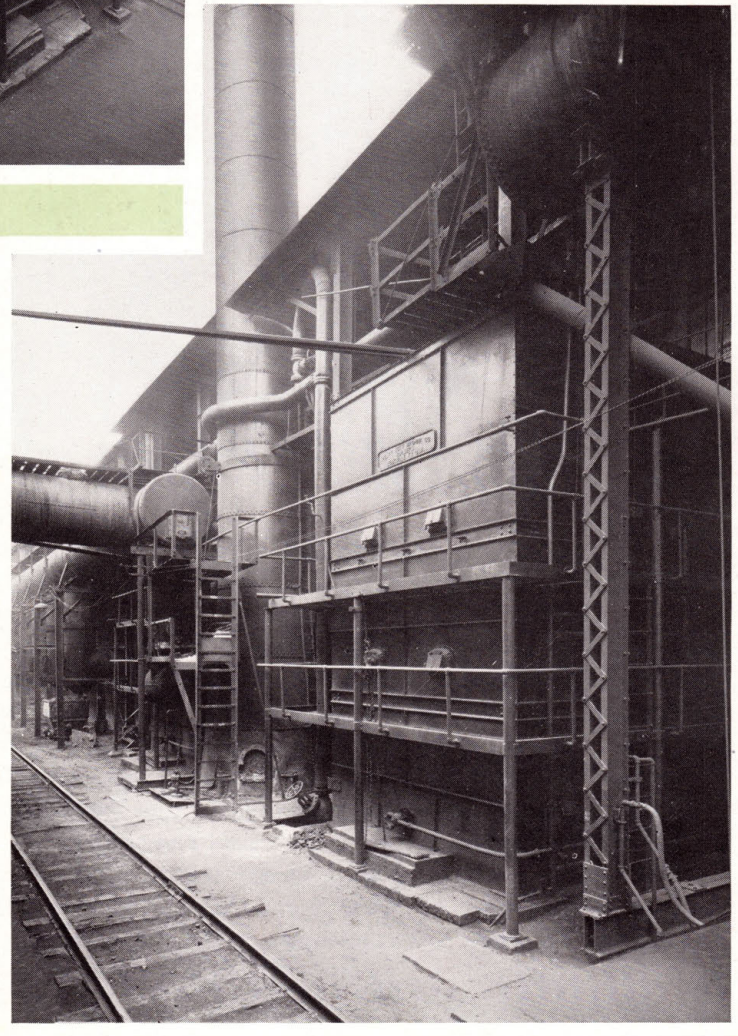


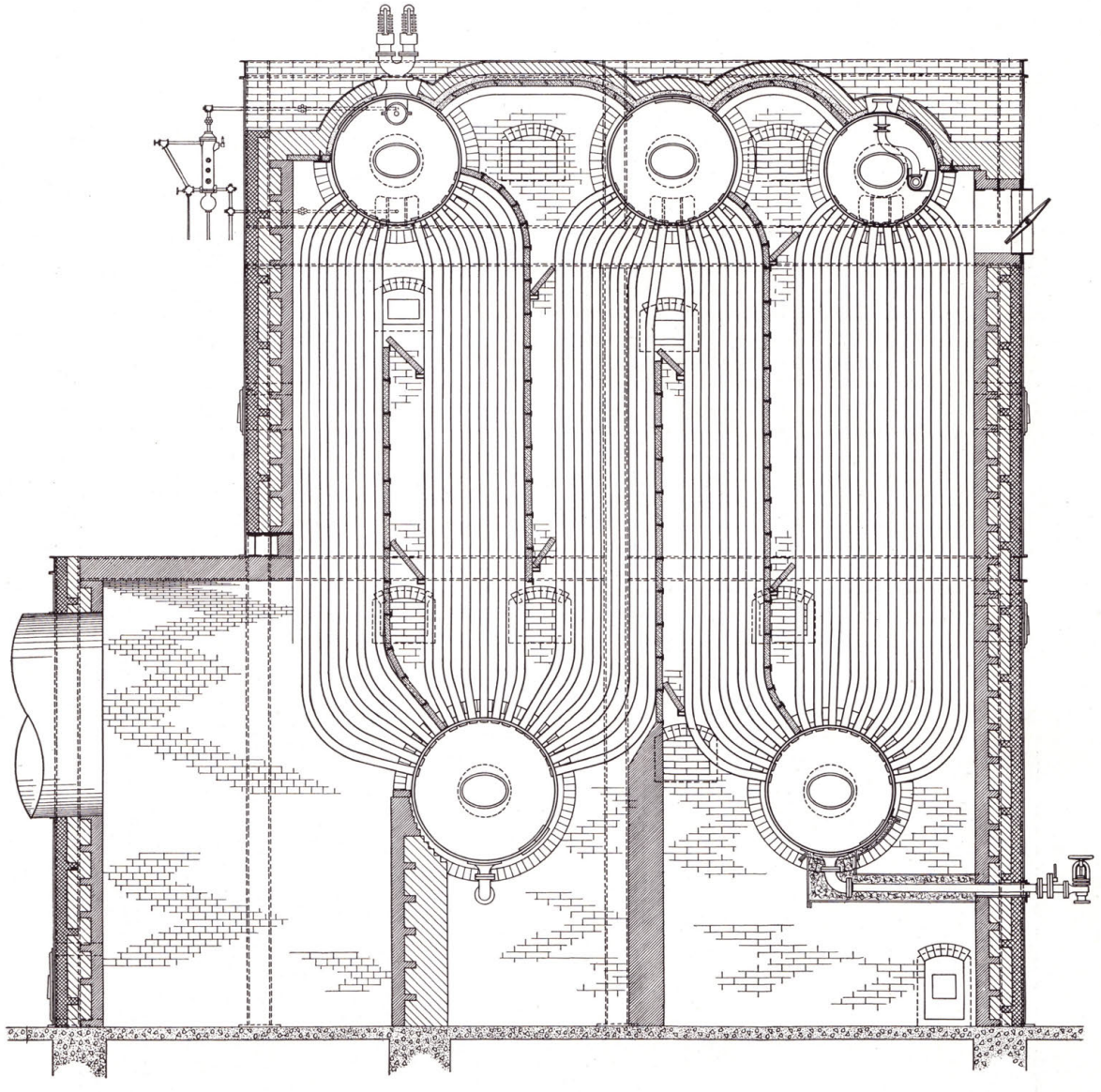
Where waste gases are available in sufficient quantity and temperature, steam generating equipment to utilize such heat becomes a worthwhile investment. Coke ovens, cement kilns, nickel and zinc refining stills, etc. are available sources for such application. Economical waste heat utilization depends largely on the ability of the manufacturer to provide a suitable design of boiler for individual conditions involving in particular an arrangement of tube surface and baffling that will best absorb the specific heat of a given weight and temperature of gas. The Vogt Class WH vertical waste heat boiler is ideally suited for the majority of conditions. However, where desired the Class S cross drum type like shown on page 45 may be modified for waste heat application.



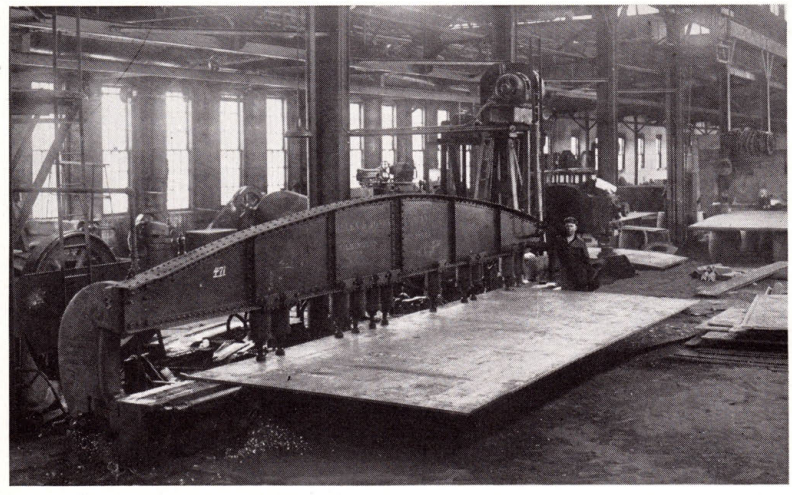
Steam superheated 125 degrees is produced at the Andrews Steel Company, Newport, Ky. where two 600 H. P. Vogt waste heat boilers handle 100,000 pounds of open hearth furnace gas per hour at approximately 1,400 degrees F.





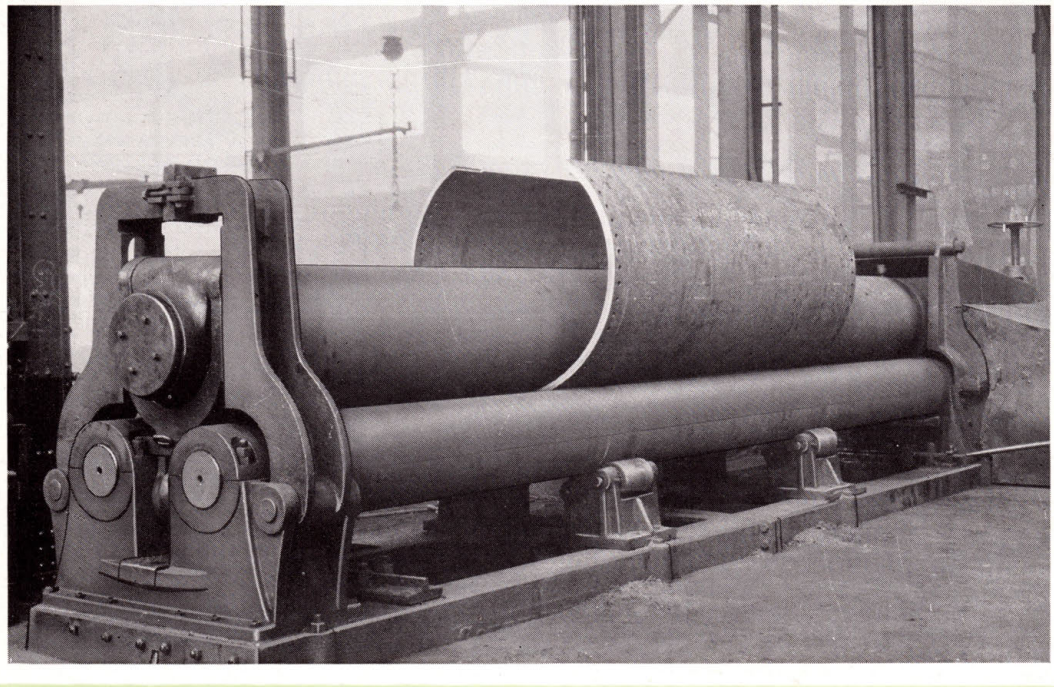


Above is illustrated the Vogt Waste Heat Boiler Class WH designed for large capacities. The baffling is arranged to provide maximum heat transfer by thorough contact of the gases with the entire tube surface. The gas may enter the setting from beneath if desired in which event the extended front is eliminated. A very high degree of superheat, depending on the initial gas temperature, can be obtained by placing a superheater in the gas duct ahead of the boiler.

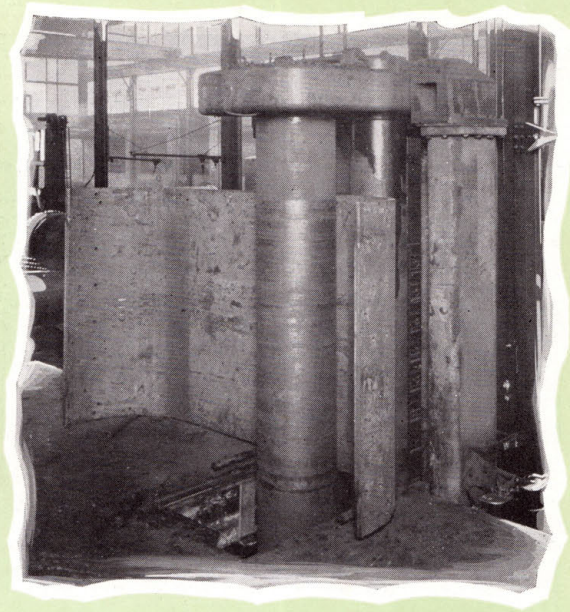


Shop facilities for the speedy and accurate fabrication of water tube boilers are the best that modern engineering skill affords.

In the 35 ft. planer shown here all edges of plates are planed smooth. Such edges as require caulking are bevelled to 70 degrees according to the A. S. M. E. Boiler Construction Code. Below are the 24 ft. horizontal bending rolls which produce shells of unvarying diameters.

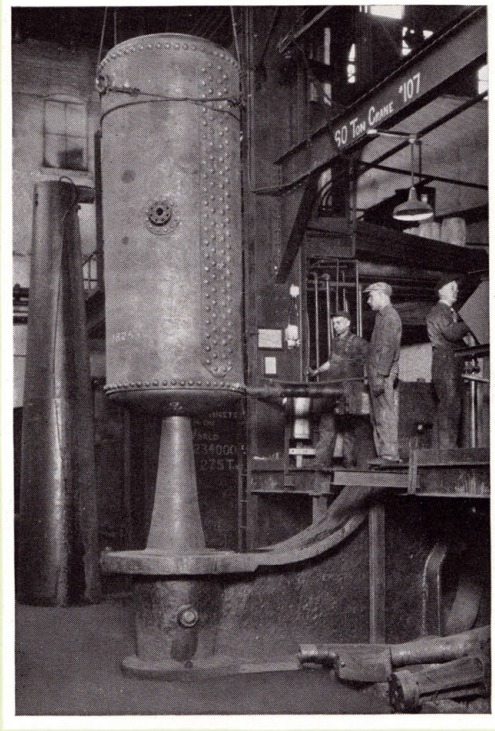


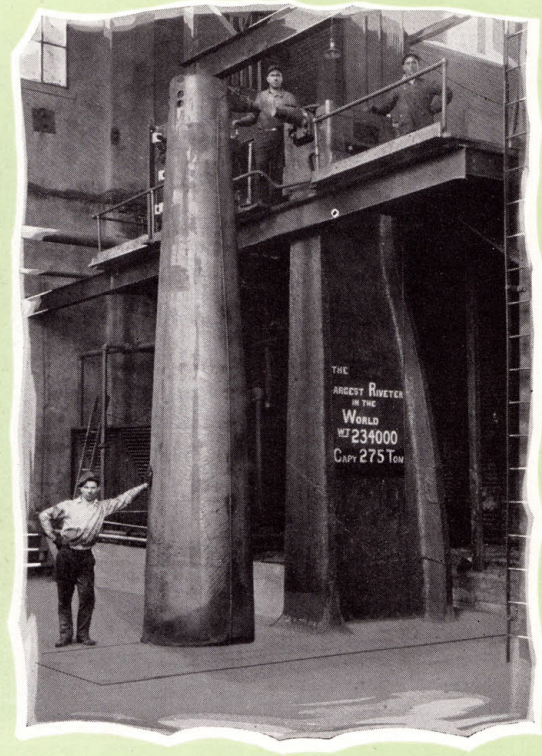
This set of vertical rolls with adjustable platform permits rolling of heavy plates necessary for high pressure and large capacity boilers.

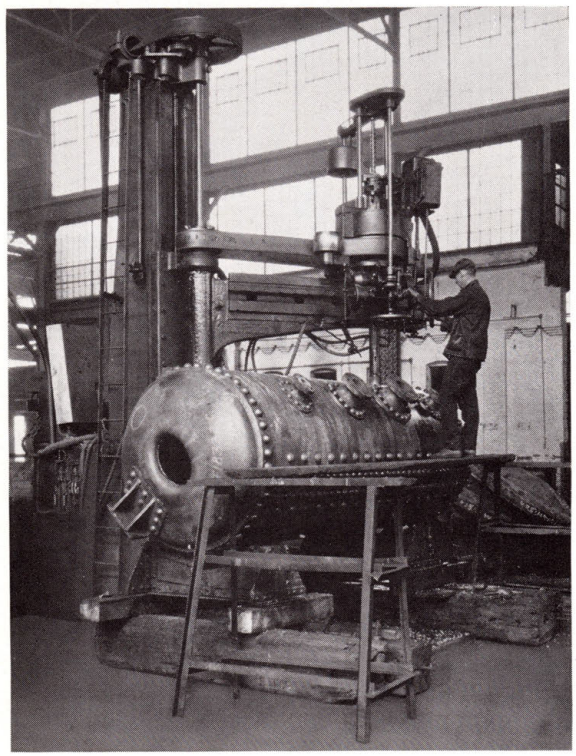


All rivets are hydraulically driven. This is accomplished in all Vogt boiler drums including both heads and all flange openings. Below a special hydraulic riveter is shown riveting a head through the manhole opening.

For riveting longitudinal seams several hydraulic riveters of varying capacity up to 275 tons, sufficient to accommodate 3″ plates are available.

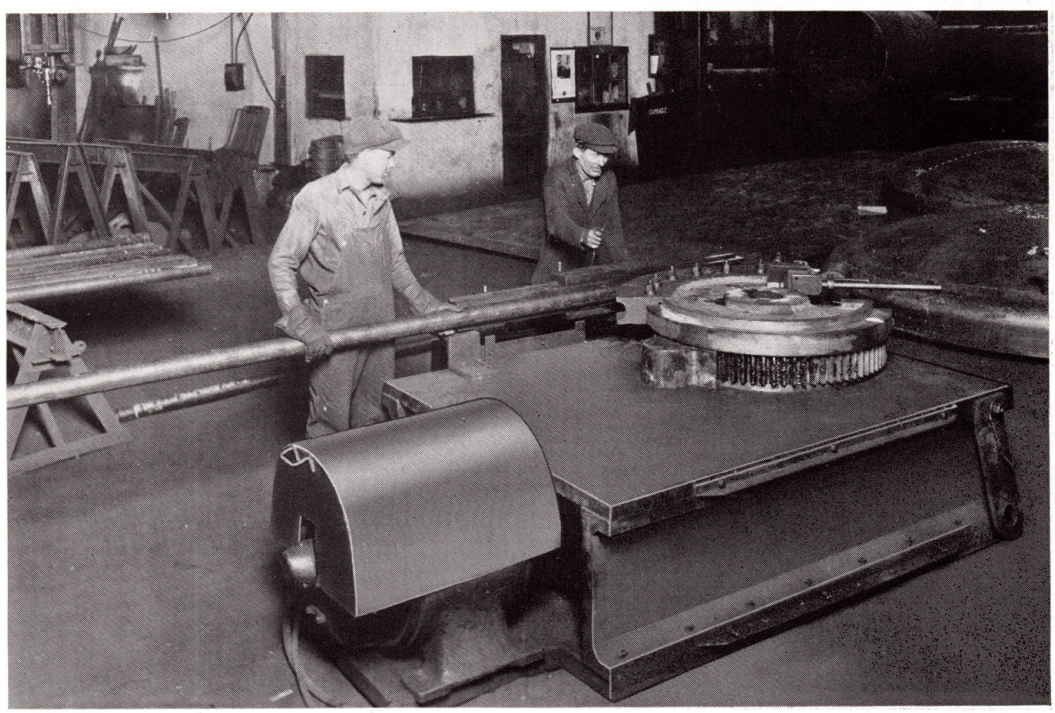


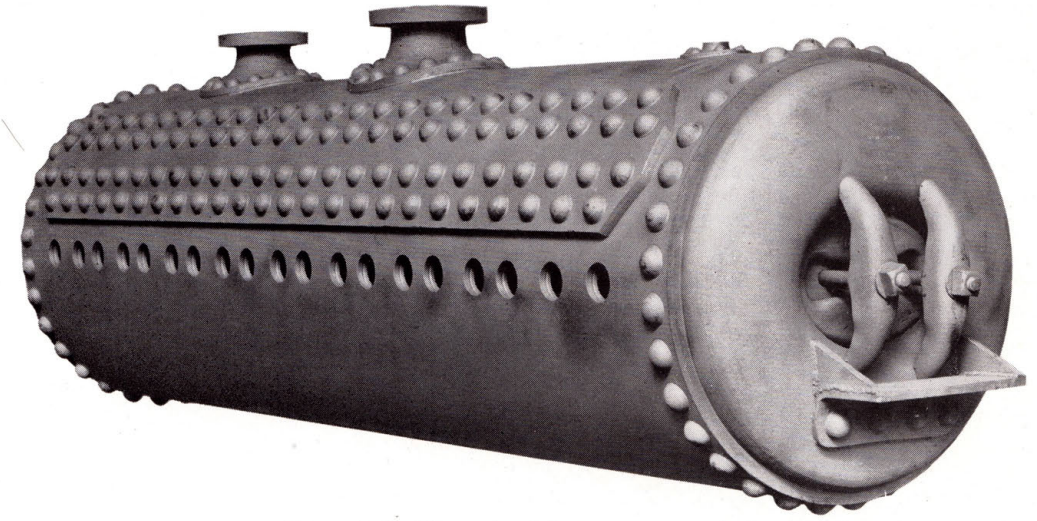




After a thorough hydrostatic pressure test and a careful inspection of every rivet the tube holes are drilled radially true and to exact size. Special cutting tools with lead drills made in our own tool department assure uniformly smooth holes.

There is no buckling or stretching of the tube wall when tubes are bent in this machine designed and built in our own plant expressly for boiler tubes.



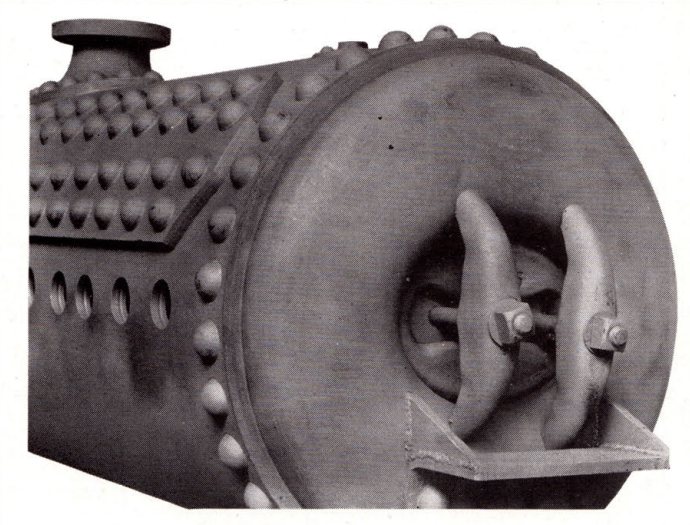


This and the illustration below are unretouched

MATERIAL AND WORKMANSHIP

Two major elements that constitute the longevity of a boiler, combined with normal care in operation, are best material and finest workmanship. Although the cost for quality material is slightly higher it is easily outweighed by its greater service. Even good materials are at the mercy of cheap inexperienced labor and to guard against this, only mature competent help long in the service of the company is engaged in every operation.

The illustration of a complete high pressure steam drum shown above best conveys our meaning of better materials and workmanship. Below is a close-up view to more clearly show the uniformly driven rivets.



VOGT INTERLAPPING TILE

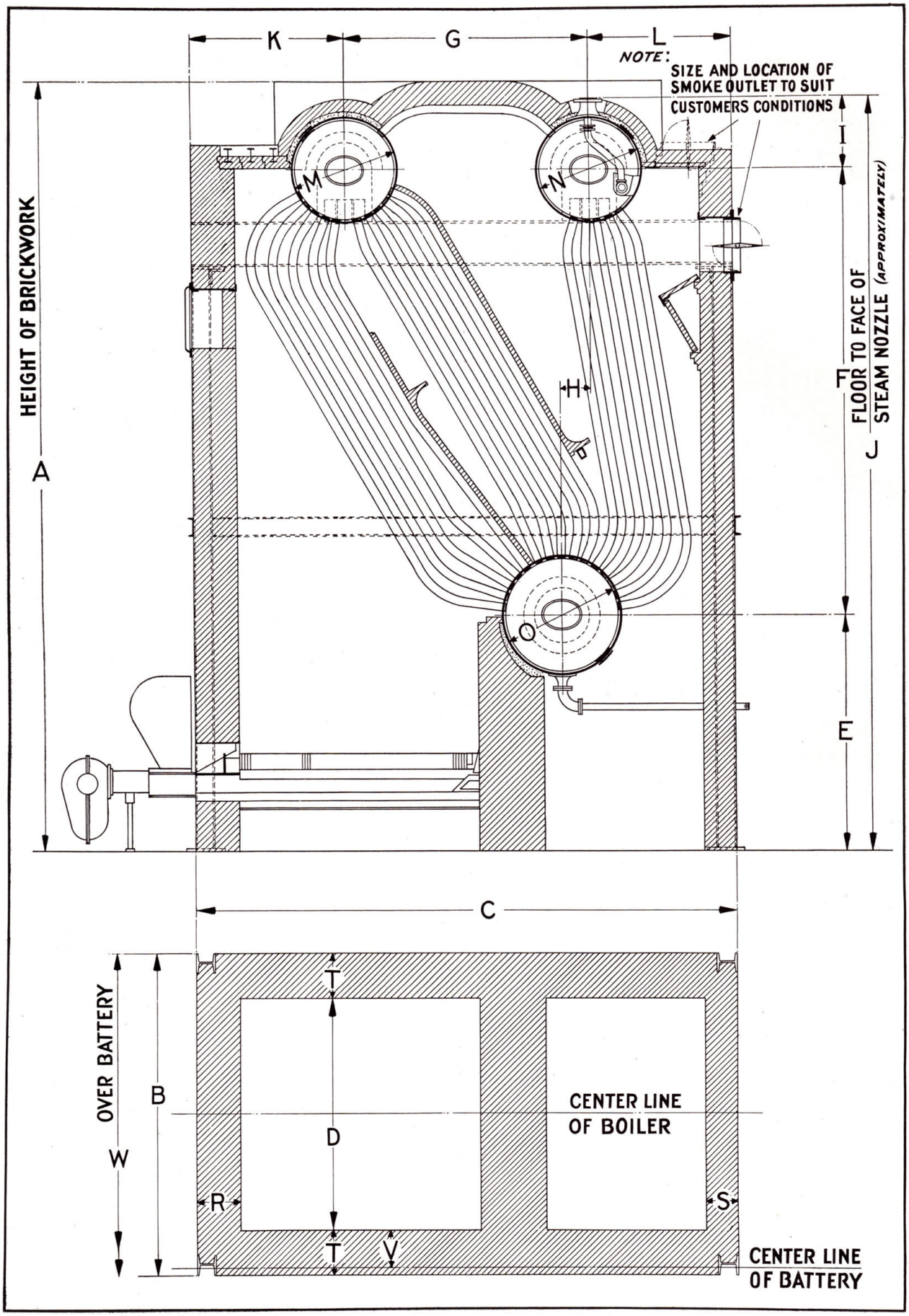
This shop view shows the smooth appearance of Vogt Interlapping Tile on sharp bends

Vogt Interlapping Tile are an exclusive design having been employed on all Vogt Water Tube Boiler installations for the past twenty-five years. They are thoroughly kiln baked from select cured flint fire clay which practically eliminates contraction and expansion. After baking they contain nearly 45% of alumina which increases their resistance to heat, corrosive slag and gases.

The interlapping feature provides for simple gas tight application without the use of cement. A uniform thickness is maintained in every tile. Numerous shapes and sizes are available to care for any curvature or specified area to be covered. They are also readily adaptable for baffle walls between tube rows. They may be removed and replaced at will. Replacing of tubes does not necessitate their being disturbed.

The following pages contain diagrammatic illustrations and tables of setting dimensions and other useful information.

VOGT WATER TUBE BOILER SETTINGS "TYPE R"

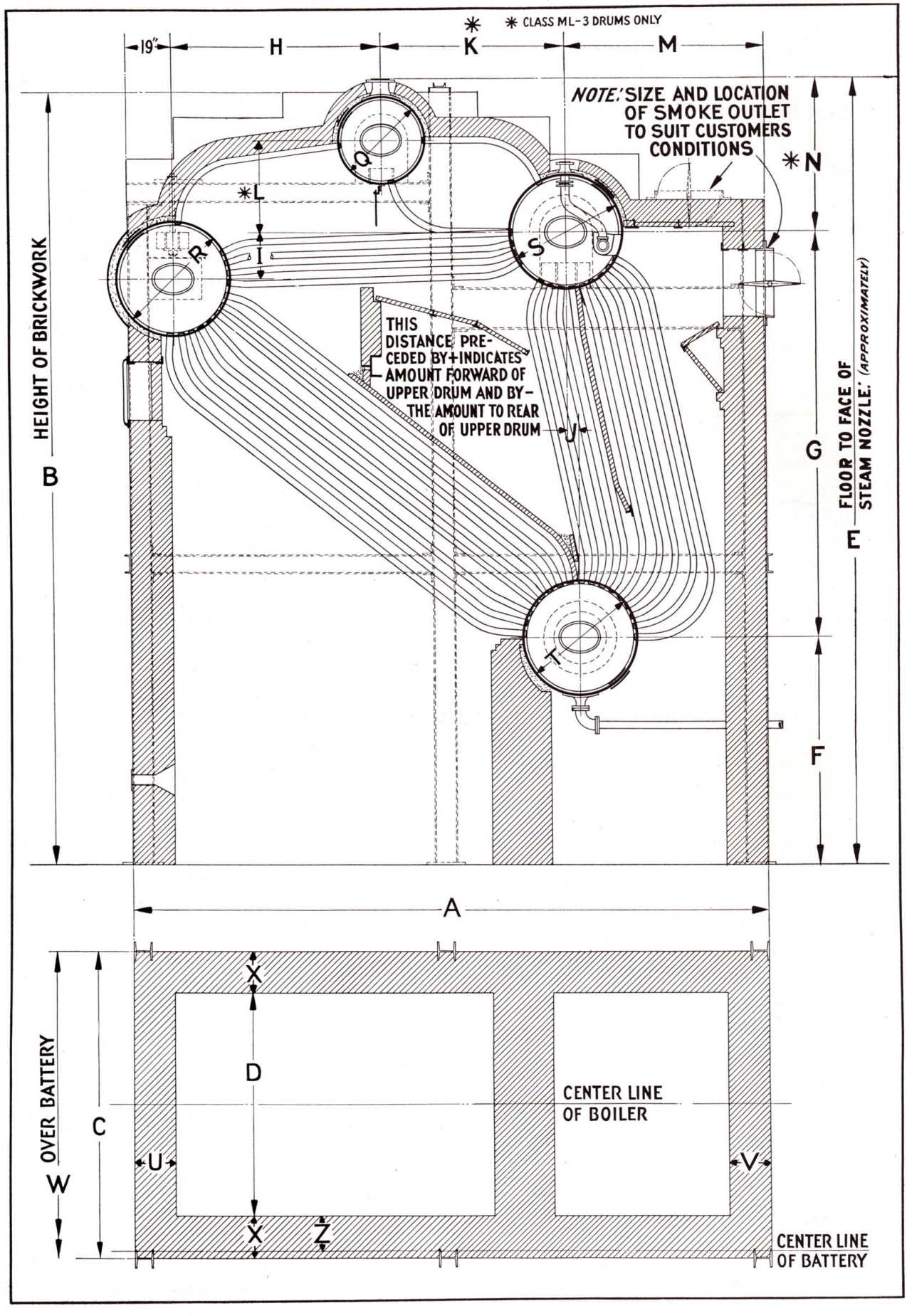


VOGT WATER TUBE BOILER SETTINGS "TYPE R"

⊗NOTE—Dimension "E" may be varied to suit customer. When "E" changes, dimensions A-J change proportionately.

CLASS	TUBES WIDE	HEATING SURFACE	A ⊗	B	C	D	E ⊗	F	G	H	I	J ⊗	K	L	M	N	O	R	S	T	V	W	STEAM OUTLET	FEED WATER
RL-555	10	1577	21′-9 1/8″	8′-0″	17′-0″	5′-0″	6′-0″	12′-9 1/2″	7′- 3 29/32″	1′- 4 29/32″	2′-4″	21′- 1 1/2″	5′-2 1/2″	4′- 5 19/32″	42″	42″	48″	18″	13″	18″	15″	15′-6″	5″	2″
	13	2051	21′-9 1/8″	9′-6″	17′-0″	6′-6″		12′-9 1/2″	7′- 3 29/32″	1′- 4 29/32″	2′-4″	21′- 1 1/2″	5′-2 1/2″	4′- 5 19/32″	42″	42″	48″	18″	13″	18″	15″	18′-6″	5″	2″
	16	2524	21′-9 1/8″	11′-0″	17′-0″	8′-0″		12′-9 1/2″	7′- 3 29/32″	1′- 4 29/32″	2′-5″	21′- 2 1/2″	5′-2 1/2″	4′- 5 19/32″	42″	42″	48″	18″	13″	18″	15″	21′-6″	6″	2 1/2″
	19	2997	21′-9 1/8″	12′-6″	17′-0″	9′-6″		12′-9 1/2″	7′- 3 29/32″	1′- 4 29/32″	2′-5″	21′- 2 1/2″	5′-2 1/2″	4′- 5 19/32″	42″	42″	48″	18″	13″	18″	15″	24′-6″	6″	2 1/2″
	22	3470	21′-9 1/8″	14′-0″	17′-0″	11′-0″		12′-9 1/2″	7′- 3 29/32″	1′- 4 29/32″	2′-5″	21′- 2 1/2″	5′-2 1/2″	4′- 5 19/32″	42″	42″	48″	18″	13″	18″	15″	27′-6″	6″	2 1/2″
	27	4259	21′-9 1/8″	16′-6″	17′-0″	13′-6″		12′-9 1/2″	7′- 3 29/32″	1′- 4 29/32″	2′-5″	21′- 2 1/2″	5′-2 1/2″	4′- 5 19/32″	42″	42″	48″	18″	13″	18″	15″	32′-6″	6″	3″
RS-555	11	1949	24′-1 5/8″	8′-6″	17′-9 1/2″	5′-6″	7′-0″	14′-2″	7′-10 5/8″	1′- 2 3/32″	2′-4″	23′- 6″	5′-2 1/2″	4′- 8 3/8″	42″	42″	48″	18″	13″	18″	15″	16′-6″	5″	2″
	14	2481	24′-1 5/8″	10′-0″	17′-9 1/2″	7′-0″		14′-2″	7′-10 5/8″	1′- 2 3/32″	2′-5″	23′- 7″	5′-2 1/2″	4′- 8 3/8″	42″	42″	48″	18″	13″	18″	15″	19′-6″	6″	2″
	17	3012	24′-1 5/8″	11′-6″	17′-9 1/2″	8′-6″		14′-2″	7′-10 5/8″	1′- 2 3/32″	2′-5″	23′- 7″	5′-2 1/2″	4′- 8 3/8″	42″	42″	48″	18″	13″	18″	15″	22′-6″	6″	2 1/2″
	20	3544	24′-1 5/8″	13′-0″	17′-9 1/2″	10′-0″		14′-2″	7′-10 5/8″	1′- 2 3/32″	2′-5″	23′- 7″	5′-2 1/2″	4′- 8 3/8″	42″	42″	48″	18″	13″	18″	15″	25′-6″	6″	2 1/2″
	23	4075	24′-1 5/8″	14′-6″	17′-9 1/2″	11′-6″		14′-2″	7′-10 5/8″	1′- 2 3/32″	2′-5″	23′- 7″	5′-2 1/2″	4′- 8 3/8″	42″	42″	48″	18″	13″	18″	15″	28′-6″	6″	3″
	26	4607	24′-1 5/8″	16′-0″	17′-9 1/2″	13′-0″		14′-2″	7′-10 5/8″	1′- 2 3/32″	2′-5″	23′- 7″	5′-2 1/2″	4′- 8 3/8″	42″	42″	48″	18″	13″	18″	15″	31′-6″	6″	3″
	29	5139	24′-1 5/8″	17′-6″	17′-9 1/2″	14′-6″		14′-2″	7′-10 5/8″	1′- 2 3/32″	2′-5″	23′- 7″	5′-2 1/2″	4′- 8 3/8″	42″	42″	48″	18″	13″	18″	15″	34′-6″	6″	3 1/2″
RHS-555	12	2296	25′-7 5/8″	9′-0″	18′-4 7/16″	6′-0″	7′-6″	15′-2″	8′- 3 9/16″	1′- 0 1/8″	2′-5″	25′- 1″	5′-2 1/2″	4′-10 3/8″	42″	42″	48″	18″	13″	18″	15″	17′-6″	6″	2″
	15	2870	25′-7 5/8″	10′-6″	18′-4 7/16″	7′-6″		15′-2″	8′- 3 9/16″	1′- 0 1/8″	2′-5″	25′- 1″	5′-2 1/2″	4′-10 3/8″	42″	42″	48″	18″	13″	18″	15″	20′-6″	6″	2 1/2″
	18	3444	25′-7 5/8″	12′-0″	18′-4 7/16″	9′-0″		15′-2″	8′- 3 9/16″	1′- 0 1/8″	2′-5″	25′- 1″	5′-2 1/2″	4′-10 3/8″	42″	42″	48″	18″	13″	18″	15″	23′-6″	6″	2 1/2″
	21	4018	25′-7 5/8″	13′-6″	18′-4 7/16″	10′-6″		15′-2″	8′- 3 9/16″	1′- 0 1/8″	2′-5″	25′- 1″	5′-2 1/2″	4′-10 3/8″	42″	42″	48″	18″	13″	18″	15″	26′-6″	6″	3″
	24	4592	25′-7 5/8″	15′-0″	18′-4 7/16″	12′-0″		15′-2″	8′- 3 9/16″	1′- 0 1/8″	2′-5″	25′- 1″	5′-2 1/2″	4′-10 3/8″	42″	42″	48″	18″	13″	18″	15″	29′-6″	6″	3″
	27	5166	25′-7 5/8″	16′-6″	18′-4 7/16″	13′-6″		15′-2″	8′- 3 9/16″	1′- 0 1/8″	2′-5″	25′- 1″	5′-2 1/2″	4′-10 3/8″	42″	42″	48″	18″	13″	18″	15″	32′-6″	6″	3 1/2″
RH-555	10	1967	26′-6 1/8″	8′-0″	18′-7 1/16″	5′-0″	8′-0″	15′-6 1/2″	8′- 5 7/16″	0′-11 3/8″	2′-4″	25′-10 1/2″	5′-2 1/2″	4′-11 1/8″	42″	42″	48″	18″	13″	18″	15″	15′-6″	5″	2″
	13	2558	26′-6 1/8″	9′-6″	18′-7 1/16″	6′-6″		15′-6 1/2″	8′- 5 7/16″	0′-11 3/8″	2′-5″	25′-11 1/2″	5′-2 1/2″	4′-11 1/8″	42″	42″	48″	18″	13″	18″	15″	18′-6″	6″	2 1/2″
	16	3148	26′-6 1/8″	11′-0″	18′-7 1/16″	8′-0″		15′-6 1/2″	8′- 5 7/16″	0′-11 3/8″	2′-5″	25′-11 1/2″	5′-2 1/2″	4′-11 1/8″	42″	42″	48″	18″	13″	18″	15″	21′-6″	6″	2 1/2″
	19	3738	26′-6 1/8″	12′-6″	18′-7 1/16″	9′-6″		15′-6 1/2″	8′- 5 7/16″	0′-11 3/8″	2′-5″	25′-11 1/2″	5′-2 1/2″	4′-11 1/8″	42″	42″	48″	18″	13″	18″	15″	24′-6″	6″	2 1/2″
	22	4338	26′-6 1/8″	14′-0″	18′-7 1/16″	11′-0″		15′-6 1/2″	8′- 5 7/16″	0′-11 3/8″	2′-5″	25′-11 1/2″	5′-2 1/2″	4′-11 1/8″	42″	42″	48″	18″	13″	18″	15″	27′-6″	6″	3″
	25	4919	26′-6 1/8″	15′-6″	18′-7 1/16″	12′-6″		15′-6 1/2″	8′- 5 7/16″	0′-11 3/8″	2′-5″	25′-11 1/2″	5′-2 1/2″	4′-11 1/8″	42″	42″	48″	18″	13″	18″	15″	30′-6″	6″	3″
	28	5509	26′-6 1/8″	17′-0″	18′-7 1/16″	14′-0″		15′-6 1/2″	8′- 5 7/16″	0′-11 3/8″	2′-5″	25′-11 1/2″	5′-2 1/2″	4′-11 1/8″	42″	42″	48″	18″	13″	18″	15″	33′-6″	6″	3 1/2″
	30	5902	26′-6 1/8″	18′-0″	18′-7 1/16″	15′-0″		15′-6 1/2″	8′- 5 7/16″	0′-11 3/8″	2′-5″	25′-11 1/2″	5′-2 1/2″	4′-11 1/8″	42″	42″	48″	18″	13″	18″	15″	35′-6″	6″	3 1/2″
RL-566	12	2228	23′-9 1/8″	9′-8″	18′-3 3/8″	6′-0″	7′-0″	13′-8″	8′- 2 3/16″	1′-10 11/16″	2′-8″	23′- 4″	5′-4 1/2″	4′- 8 11/16″	48″	48″	54″	22″	18″	22″	18″	18′-8″	6″	2″
	15	2785	23′-9 1/8″	11′-2″	18′-3 3/8″	7′-6″		13′-8″	8′- 2 3/16″	1′-10 11/16″	2′-8″	23′- 4″	5′-4 1/2″	4′- 8 11/16″	48″	48″	54″	22″	18″	22″	18″	21′-8″	6″	2 1/2″
	19	3528	23′-9 1/8″	13′-2″	18′-3 3/8″	9′-6″		13′-8″	8′- 2 3/16″	1′-10 11/16″	2′-8″	23′- 4″	5′-4 1/2″	4′- 8 11/16″	48″	48″	54″	22″	18″	22″	18″	25′-8″	6″	2 1/2″
	24	4456	23′-9 1/8″	15′-8″	18′-3 3/8″	12′-0″		13′-8″	8′- 2 3/16″	1′-10 11/16″	2′-8″	23′- 4″	5′-4 1/2″	4′- 8 11/16″	48″	48″	54″	22″	18″	22″	18″	30′-8″	6″	3″
	27	5013	23′-9 1/8″	17′-2″	18′-3 3/8″	13′-6″		13′-8″	8′- 2 3/16″	1′-10 11/16″	2′-8″	23′- 4″	5′-4 1/2″	4′- 8 11/16″	48″	48″	54″	22″	18″	22″	18″	33′-8″	6″	3 1/2″
	31	5756	23′-9 1/8″	19′-2″	18′-3 3/8″	15′-6″		13′-8″	8′- 2 3/16″	1′-10 11/16″	2′-8″	23′- 4″	5′-4 1/2″	4′- 8 11/16″	48″	48″	54″	22″	18″	22″	18″	37′-8″	6″	3 1/2″
	35	6499	23′-9 1/8″	21′-2″	18′-3 3/8″	17′-6″		13′-8″	8′- 2 3/16″	1′-10 11/16″	2′-8″	23′- 4″	5′-4 1/2″	4′- 8 11/16″	48″	48″	54″	22″	18″	22″	18″	41′-8″	8″	3 1/2″
RS-566	13	2933	27′-3 1/8″	10′-2″	19′-8 11/16″	6′-6″	8′-0″	16′-2″	9′- 3 13/16″	1′- 7″	2′-8″	26′-10″	5′-4 1/2″	5′- 0 3/8″	48″	48″	54″	22″	18″	22″	18″	19′-8″	6″	2 1/2″
	16	3610	27′-3 1/8″	11′-8″	19′-8 11/16″	8′-0″		16′-2″	9′- 3 13/16″	1′- 7″	2′-8″	26′-10″	5′-4 1/2″	5′- 0 3/8″	48″	48″	54″	22″	18″	22″	18″	22′-8″	6″	3″
	20	4512	27′-3 1/8″	13′-8″	19′-8 11/16″	10′-0″		16′-2″	9′- 3 13/16″	1′- 7″	2′-8″	26′-10″	5′-4 1/2″	5′- 0 3/8″	48″	48″	54″	22″	18″	22″	18″	26′-8″	6″	3″
	26	5866	27′-3 1/8″	16′-8″	19′-8 11/16″	13′-0″		16′-2″	9′- 3 13/16″	1′- 7″	2′-8″	26′-10″	5′-4 1/2″	5′- 0 3/8″	48″	48″	54″	22″	18″	22″	18″	32′-8″	6″	3 1/2″
	30	6768	27′-3 1/8″	18′-8″	19′-8 11/16″	15′-0″		16′-2″	9′- 3 13/16″	1′- 7″	2′-8″	26′-10″	5′-4 1/2″	5′- 0 3/8″	48″	48″	54″	22″	18″	22″	18″	36′-8″	8″	3 1/2″
	34	7670	27′-3 1/8″	20′-8″	19′-8 11/16″	17′-0″		16′-2″	9′- 3 13/16″	1′- 7″	2′-8″	26′-10″	5′-4 1/2″	5′- 0 3/8″	48″	48″	54″	22″	18″	22″	18″	40′-8″	8″	4″
	39	8798	27′-3 1/8″	23′-2″	19′-8 11/16″	19′-6″		16′-2″	9′- 3 13/16″	1′- 7″	2′-8″	26′-10″	5′-4 1/2″	5′- 0 3/8″	48″	48″	54″	22″	18″	22″	18″	45′-8″	8″	5″
RH-566	15	3982	31′-9 1/8″	11′-2″	21′-2″	7′-6″	10′-0″	18′-8″	10′-5 7/16″	1′- 3 5/16″	2′-8″	31′- 4″	5′-4 1/2″	5′- 4 1/16″	48″	48″	54″	22″	18″	22″	18″	21′-8″	6″	3″
	19	5044	31′-9 1/8″	13′-2″	21′-2″	9′-6″		18′-8″	10′-5 7/16″	1′- 3 5/16″	2′-8″	31′- 4″	5′-4 1/2″	5′- 4 1/16″	48″	48″	54″	22″	18″	22″	18″	25′-8″	6″	3 1/2″
	24	6371	31′-9 1/8″	15′-8″	21′-2″	12′-0″		18′-8″	10′-5 7/16″	1′- 3 5/16″	2′-8″	31′- 4″	5′-4 1/2″	5′- 4 1/16″	48″	48″	54″	22″	18″	22″	18″	30′-8″	8″	3 1/2″
	30	7963	31′-9 1/8″	18′-8″	21′-2″	15′-0″		18′-8″	10′-5 7/16″	1′- 3 5/16″	2′-8″	31′- 4″	5′-4 1/2″	5′- 4 1/16″	48″	48″	54″	22″	18″	22″	18″	36′-8″	8″	4″
	34	9025	31′-9 1/8″	20′-8″	21′-2″	17′-0″		18′-8″	10′-5 7/16″	1′- 3 5/16″	2′-8″	31′- 4″	5′-4 1/2″	5′- 4 1/16″	48″	48″	54″	22″	18″	22″	18″	40′-8″	8″	5″
	38	10087	31′-9 1/8″	22′-8″	21′-2″	19′-0″		18′-8″	10′-5 7/16″	1′- 3 5/16″	2′-8″	31′- 4″	5′-4 1/2″	5′- 4 1/16″	48″	48″	54″	22″	18″	22″	18″	44′-8″	8″	2–3 1/2″
	42	11149	31′-9 1/8″	24′-8″	22′-2″	21′-0″		18′-8″	10′-5 7/16″	1′- 3 5/16″	2′-8″	31′- 4″	5′-4 1/2″	5′- 4 1/16″	48″	48″	54″	22″	18″	22″	18″	48′-8″	8″	2–3 1/2″

VOGT WATER TUBE BOILER SETTINGS "TYPE M"

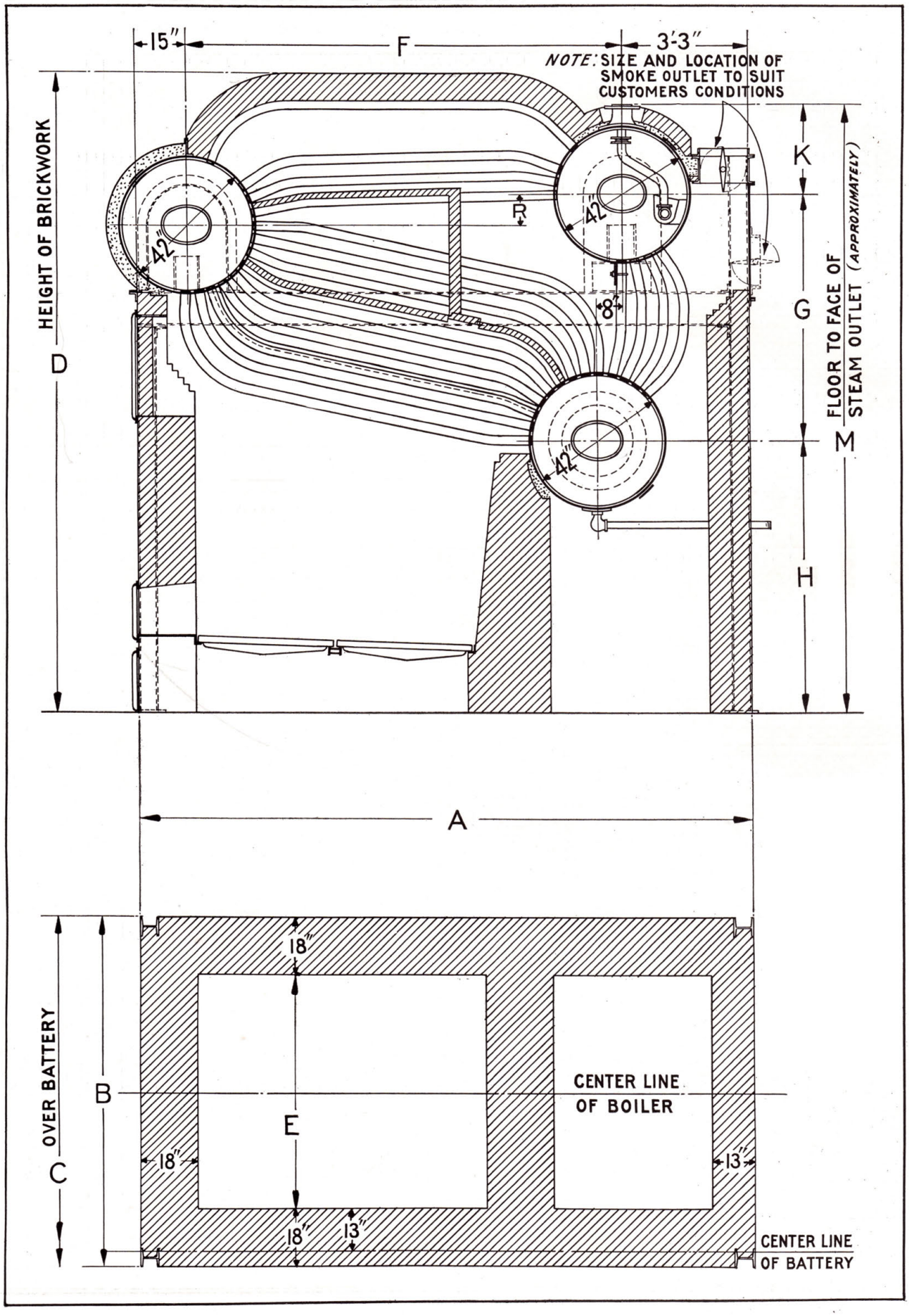


VOGT WATER TUBE BOILER SETTINGS "TYPE M"

⊗NOTE—Dimension "F" may be varied to suit customer. When "F" changes, dimensions B-E change proportionately.

CLASS	TUBES WIDE	HEATING SURFACE	A	B ⊗	C	D	E ⊗	F ⊗	G	H	I	+&− J	K *	L *	M	N *	Q	R	S	T	U	V	W	X	Z	STEAM OUTLET	FEED WATER
ML-647	10	1643	20′- 5″	21′-4½″	8′-0″	5′-0″	20′- 7″	7′0″	11′-0″	14′-0″	18½″	−2³²⁄₃₂″		2′-6″	4′-10″	2′-7″		48″	48″	42″	18″	13″	15′-6″	18″	15″	5″	2″
	12	1971	20′- 5″	21′-4½″	9′-0″	6′-0″	20′- 7″		11′-0″	14′-0″	18½″	−2³²⁄₃₂″		2′-6″	4′-10″	2′-7″		48″	48″	42″	18″	13″	17′-6″	18″	15″	5″	2″
	14	2300	20′- 5″	21′-4½″	10′-0″	7′-0″	20′- 8″		11′-0″	14′-0″	18½″	−2³²⁄₃₂″		2′-6″	4′-10″	2′-8″		48″	48″	42″	18″	13″	19′-6″	18″	15″	6″	2½″
	16	2629	20′- 5″	21′-4½″	11′-0″	8′-0″	20′- 8″		11′-0″	14′-0″	18½″	−2³²⁄₃₂″		2′-6″	4′-10″	2′-8″		48″	48″	42″	18″	13″	21′-6″	18″	15″	6″	2½″
	18	2957	20′- 5″	21′-4½″	12′-0″	9′-0″	20′- 8″		11′-0″	14′-0″	18½″	−2³²⁄₃₂″		2′-6″	4′-10″	2′-8″		48″	48″	42″	18″	13″	23′-6″	18″	15″	6″	2½″
	20	3286	20′- 5″	21′-4½″	13′-0″	10′-0″	20′- 8″		11′-0″	14′-0″	18½″	−2³²⁄₃₂″		2′-6″	4′-10″	2′-8″		48″	48″	42″	18″	13″	25′-6″	18″	15″	6″	2½″
	22	3614	20′- 5″	21′-4½″	14′-0″	11′-0″	20′- 8″		11′-0″	14′-0″	18½″	−2³²⁄₃₂″		2′-6″	4′-10″	2′-8″		48″	48″	42″	18″	13″	27′-6″	18″	15″	6″	2½″
	24	3943	20′- 5″	21′-4½″	15′-0″	12′-0″	20′- 8″		11′-0″	14′-0″	18½″	−2³²⁄₃₂″		2′-6″	4′-10″	2′-8″		48″	48″	42″	18″	13″	29′-6″	18″	15″	6″	2½″
MS-748	10	2108	21′- 8″	26′-7½″	8′-8″	5′-0″	27′- 0³⁄₁₆″	8′0″	13′-7⁷⁄₁₆″	7′-6″	18½″	0″	6′-6″	3′-4″	6′- 1″	5′-4³⁄₄″	36″	48″	48″	48″	22″	18″	16′-8″	22″	18″	5″	2″
	13	2740	21′- 8″	26′-7½″	10′-2″	6′-6″	27′- 1³⁄₁₆″		13′-7⁷⁄₁₆″	7′-6″	18½″	0″	6′-6″	3′-4″	6′- 1″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	19′-8″	22″	18″	6″	2½″
	16	3373	21′- 8″	26′-7½″	11′-8″	8′-0″	27′- 1³⁄₁₆″		13′-7⁷⁄₁₆″	7′-6″	18½″	0″	6′-6″	3′-4″	6′- 1″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	22′-8″	22″	18″	6″	2½″
	19	4005	21′- 8″	26′-7½″	13′-2″	9′-6″	27′- 1³⁄₁₆″		13′-7⁷⁄₁₆″	7′-6″	18½″	0″	6′-6″	3′-4″	6′- 1″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	25′-8″	22″	18″	6″	3″
	22	4637	21′- 8″	26′-7½″	14′-8″	11′-0″	27′- 1³⁄₁₆″		13′-7⁷⁄₁₆″	7′-6″	18½″	0″	6′-6″	3′-4″	6′- 1″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	28′-8″	22″	18″	6″	3″
	25	5270	21′- 8″	26′-7½″	16′-2″	12′-6″	27′- 1³⁄₁₆″		13′-7⁷⁄₁₆″	7′-6″	18½″	0″	6′-6″	3′-4″	6′- 1″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	31′-8″	22″	18″	6″	3½″
	28	5902	21′- 8″	26′-7½″	17′-8″	14′-0″	27′- 1³⁄₁₆″		13′-7⁷⁄₁₆″	7′-6″	18½″	0″	6′-6″	3′-4″	6′- 1″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	34′-8″	22″	18″	6″	3½″
	31	6535	21′- 8″	26′-7½″	19′-2″	15′-6″	27′- 1³⁄₁₆″		13′-7⁷⁄₁₆″	7′-6″	18½″	0″	6′-6″	3′-4″	6′- 1″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	37′-8″	22″	18″	8″	4″
	34	7167	21′- 8″	26′-7½″	20′-8″	17′-0″	27′- 1³⁄₁₆″		13′-7⁷⁄₁₆″	7′-6″	18½″	0″	6′-6″	3′-4″	6′- 1″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	40′-8″	22″	18″	8″	4″
MS-849	20	5007	22′- 8½″	28′-6″	13′-8″	10′-0″	28′-11¾″	9′0″	14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	26′-8″	22″	18″	6″	3½″
	24	6008	22′- 8½″	28′-6″	15′-8″	12′-0″	28′-11¾″		14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	30′-8″	22″	18″	6″	3½″
	26	6509	22′- 8½″	28′-6″	16′-8″	13′-0″	28′-11¾″		14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	32′-8″	22″	18″	6″	4″
	28	7009	22′- 8½″	28′-6″	17′-8″	14′-0″	28′-11¾″		14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	34′-8″	22″	18″	8″	4″
	30	7510	22′- 8½″	28′-6″	18′-8″	15′-0″	28′-11¾″		14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	36′-8″	22″	18″	8″	4″
	32	8011	22′- 8½″	28′-6″	19′-8″	16′-0″	28′-11¾″		14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	38′-8″	22″	18″	8″	4″
	34	8511	22′- 8½″	28′-6″	20′-8″	17′-0″	28′-11¾″		14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	40′-8″	22″	18″	8″	5″
	36	9012	22′- 8½″	28′-6″	21′-8″	18′-0″	28′-11¾″		14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	42′-8″	22″	18″	8″	5″
	38	9513	22′- 8½″	28′-6″	22′-8″	19′-0″	28′-11¾″		14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	44′-8″	22″	18″	8″	2–3″
	40	10013	22′- 8½″	28′-6″	23′-8″	20′-0″	28′-11¾″		14′-6″	7′-6″	18½″	−4″	6′-6″	3′-4″	7′- 1½″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	46′-8″	22″	18″	8″	2–3½″
MH-748	14	3451	20′-10″	32′-3½″	10′-8″	7′-0″	32′- 9¼″	10′0″	17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	20′-8″	22″	18″	6″	2½″
	17	4191	20′-10″	32′-3½″	12′-2″	8′-6″	32′- 9¼″		17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	23′-8″	22″	18″	6″	3″
	20	4930	20′-10″	32′-3½″	13′-8″	10′-0″	32′- 9¼″		17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	26′-8″	22″	18″	6″	3″
	23	5670	20′-10″	32′-3½″	15′-2″	11′-6″	32′- 9¼″		17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	29′-8″	22″	18″	6″	3½″
	26	6409	20′-10″	32′-3½″	16′-8″	13′-0″	32′- 9¼″		17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	32′-8″	22″	18″	8″	3½″
	29	7149	20′-10″	32′-3½″	18′-2″	14′-6″	32′- 9¼″		17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	35′-8″	22″	18″	8″	4″
	32	7888	20′-10″	32′-3½″	19′-8″	16′-0″	32′- 9¼″		17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	38′-8″	22″	18″	8″	4″
	35	8628	20′-10″	32′-3½″	21′-2″	17′-6″	32′- 9¼″		17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	41′-8″	22″	18″	8″	5″
	38	9367	20′-10″	32′-3½″	22′-8″	19′-0″	32′- 9¼″		17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	44′-8″	22″	18″	8″	5″
	41	10107	20′-10″	32′-3½″	24′-2″	20′-6″	32′- 9¼″		17′-3½″	7′-6″	18½″	+9¹³⁄₃₂″	6′-6″	3′-4″	5′- 3″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	47′-8″	22″	18″	8″	2–3½″
MH-849	21	6111	22′- 1″	33′-0″	14′-2″	10′-6″	33′- 5¾″	10′0″	18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	27′-8″	22″	18″	8″	3½″
	24	6984	22′- 1″	33′-0″	15′-8″	12′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	30′-8″	22″	18″	8″	4″
	26	7566	22′- 1″	33′-0″	16′-8″	13′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	32′-8″	22″	18″	8″	4″
	28	8148	22′- 1″	33′-0″	17′-8″	14′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	34′-8″	22″	18″	8″	4″
	30	8730	22′- 1″	33′-0″	18′-8″	15′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	36′-8″	22″	18″	8″	5″
	32	9312	22′- 1″	33′-0″	19′-8″	16′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	38′-8″	22″	18″	8″	5″
	34	9894	22′- 1″	33′-0″	20′-8″	17′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	40′-8″	22″	18″	8″	2–3½″
	36	10476	22′- 1″	33′-0″	21′-8″	18′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	42′-8″	22″	18″	8″	2–3½″
	38	11058	22′- 1″	33′-0″	22′-8″	19′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	44′-8″	22″	18″	8″	2–3½″
	40	11640	22′- 1″	33′-0″	23′-8″	20′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	46′-8″	22″	18″	8″	2–3½″
	42	12222	22′- 1″	33′-0″	24′-8″	21′-0″	33′- 5¾″		18′-0″	7′-6″	18½″	+2²⁄₃₂″	6′-6″	3′-4″	6′- 6″	5′-5³⁄₄″	36″	48″	48″	48″	22″	18″	48′-8″	22″	18″	10″	2–3½″

VOGT WATER TUBE BOILER SETTINGS "TYPE MLL" CLASS L-1; L-2; L-2½; L-3; L-4.

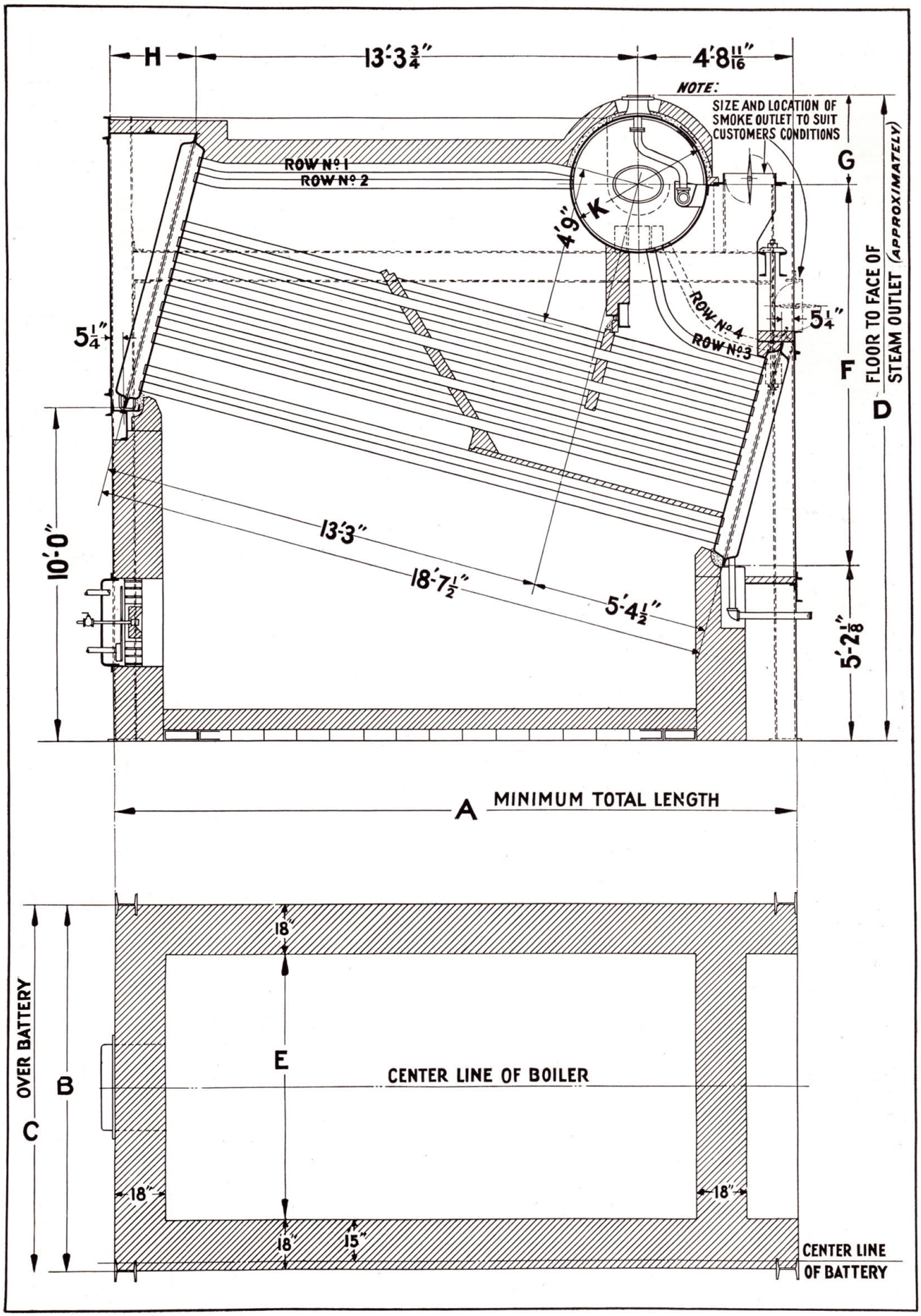


VOGT WATER TUBE BOILER SETTINGS "TYPE MLL" CLASS L-1; L-2; L-2½; L-3; L-4.

CLASS	TUBES WIDE	HEATING SURFACE	LENGTH OF SETTING "A"	WIDTH OF SETTING SINGLE B	WIDTH OF SETTING BATTERY C	HEIGHT OF SETTING "D" ⊗	E	F	G	H ⊗	K	M ⊗	R	STEAM OUTLET	FEED WATER
L-1	8	805	13′-7½″	7′-0″	13′-2″	15′-2⅞″	4′-0″	9′- 1½″	5′-10″	6′- 4¼″	2′-3¾″	14′-6″	8 9/16″	4″	2″
	9	905	13′-7½″	7′-6″	14′-2″	15′-2⅞″	4′-6″	9′- 1½″	5′-10″	6′- 4¼″	2′-3¾″	14′-6″	8 9/16″	4″	2″
	10	1006	13′-7½″	8′-0″	15′-2″	15′-2⅞″	5′-0″	9′- 1½″	5′-10″	6′- 4¼″	2′-3¾″	14′-6″	8 9/16″	4″	2″
	11	1106	13′-7½″	8′-6″	16′-2″	15′-2⅞″	5′-6″	9′- 1½″	5′-10″	6′- 4¼″	2′-3¾″	14′-6″	8 9/16″	4″	2″
	12	1207	13′-7½″	9′-0″	17′-2″	15′-2⅞″	6′-0″	9′- 1½″	5′-10″	6′- 4¼″	2′-3¾″	14′-6″	8 9/16″	4″	2″
	13	1308	13′-7½″	9′-6″	18′-2″	15′-2⅞″	6′-6″	9′- 1½″	5′-10″	6′- 4¼″	2′-3¾″	14′-6″	8 9/16″	5″	2″
	14	1408	13′-7½″	10′-0″	19′-2″	15′-2⅞″	7′-0″	9′- 1½″	5′-10″	6′- 4¼″	2′-3¾″	14′-6″	8 9/16″	5″	2″
L-2	8	998	15′-7½″	7′-0″	13′-2″	15′-2⅞″	4′-0″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′-6″	9 3/16″	4″	2″
	9	1122	15′-7½″	7′-6″	14′-2″	15′-2⅞″	4′-6″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′-6″	9 3/16″	4″	2″
	10	1247	15′-7½″	8′-0″	15′-2″	15′-2⅞″	5′-0″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′ 6″	9 3/16″	4″	2″
	11	1372	15′-7½″	8′-6″	16′-2″	15′-2⅞″	5′-6″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′-6″	9 3/16″	5″	2″
	12	1495	15′-7½″	9′-0″	17′-2″	15′-2⅞″	6′-0″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′-6″	9 3/16″	5″	2″
	13	1620	15′-7½″	9′-6″	18′-2″	15′-2⅞″	6′-6″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′-6″	9 3/16″	5″	2″
	14	1745	15′-7½″	10′-0″	19′-2″	15′-2⅞″	7′-0″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′-6″	9 3/16″	5″	2″
	15	1870	15′-7½″	10′-6″	20′-2″	15′-2⅞″	7′-6″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′-6″	9 3/16″	5″	2″
	16	1994	15′-7½″	11′-0″	21′-2″	15′-2⅞″	8′-0″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′-6″	9 3/16″	5″	2″
	17	2119	15′-7½″	11′-6″	22′-2″	15′-2⅞″	8′-6″	11′- 1½″	6′- 3¾″	5′-10½″	2′-3¾″	14′-6″	9 3/16″	5″	2″
L-2½	10	1457	17′-4½″	8′-0″	15′-2″	15′-2⅞″	5′-0″	12′-10½″	6′- 8 23/32″	5′- 5 17/32″	2′-3¾″	14′-6″	9 23/32″	5″	2″
	11	1603	17′-4½″	8′-6″	16′-2″	15′-2⅞″	5′-6″	12′-10½″	6′- 8 23/32″	5′- 5 17/32″	2′-3¾″	14′-6″	9 23/32″	5″	2″
	12	1749	17′-4½″	9′-0″	17′-2″	15′-2⅞″	6′-0″	12′-10½″	6′- 8 23/32″	5′- 5 17/32″	2′-3¾″	14′-6″	9 23/32″	5″	2″
	13	1894	17′-4½″	9′-6″	18′-2″	15′-2⅞″	6′-6″	12′-10½″	6′- 8 23/32″	5′- 5 17/32″	2′-3¾″	14′-6″	9 23/32″	5″	2″
	14	2040	17′-4½″	10′-0″	19′-2″	15′-2⅞″	7′-0″	12′-10½″	6′- 8 23/32″	5′- 5 17/32″	2′-3¾″	14′-6″	9 23/32″	5″	2″
	15	2186	17′-4½″	10′-6″	20′-2″	15′-2⅞″	7′-6″	12′-10½″	6′- 8 23/32″	5′- 5 17/32″	2′-3¾″	14′-6″	9 23/32″	5″	2″
	16	2332	17-′4½″	11′-0″	21′-2″	15′-2⅞″	8′-0″	12′-10½″	6′- 8 23/32″	5′- 5 17/32″	2′-3¾″	14′-6″	9 23/32″	5″	2″
	17	2477	17′-4½″	11′-6″	22′-2″	15′-2⅞″	8′-6″	12′-10½″	6′- 8 23/32″	5′- 5 17/32″	2′-3¾″	14′-6″	9 23/32″	5″	2″
	18	2623	17′-4½″	12′-0″	23′-2″	15′-1⅞″	9′-0″	12′-10½″	6′- 8 23/32″	5′- 4 17/32″	2′-4¾″	14′-6″	9 23/32″	6″	2½″
	19	2769	17′-4½″	12′-6″	24′-2″	15′-1⅞″	9′-6″	12′-10½″	6′- 8 23/32″	5′- 4 17/32″	2′-4¾″	14′-6″	9 23/32″	6″	2½″
L-3	11	1842	19′ 2″	8′ 6″	16′ 2″	15′-2⅞″	5′-6″	14′- 8″	7′- 1⅞″	5′- 0⅜″	2′-3¾″	14′-6″	10 9/32″	5″	2″
	12	2009	19′-2″	9′-0″	17′-2″	15′-2⅞″	6′-0″	14′- 8″	7′- 1⅞″	5′- 0⅜″	2′-3¾″	14′-6″	10 9/32″	5″	2″
	13	2177	19′-2″	9′-6″	18′-2″	15′-2⅞″	6′-6″	14′- 8″	7′- 1⅞″	5′- 0⅜″	2′-3¾″	14′-6″	10 9/32″	5″	2″
	14	2344	19′-2″	10′-0″	19′-2″	15′-2⅞″	7′-0″	14′- 8″	7′- 1⅞″	5′- 0⅜″	2′-3¾″	14′-6″	10 9/32″	5″	2″
	15	2511	19′-2″	10′-6″	20′-2″	15′-2⅞″	7′-6″	14′- 8″	7′- 1⅞″	5′- 0⅜″	2′-3¾″	14′-6″	10 9/32″	5″	2½″
	16	2679	19′-2″	11′-0″	21′-2″	15′-1⅞″	8′-0″	14′- 8″	7′- 1⅞″	4′-11⅜″	2′-4¾″	14′-6″	10 9/32″	6″	2½″
	17	2846	19′-2″	11′-6″	22′-2″	15′-1⅞″	8′-6″	14′- 8″	7′- 1⅞″	4′-11⅜″	2′-4¾″	14′-6″	10 9/32″	6″	2½″
	18	3013	19′-2″	12′-0″	23′-2″	15′-1⅞″	9′-0″	14′- 8″	7′- 1⅞″	4′-11⅜″	2′-4¾″	14′-6″	10 9/32″	6″	2½″
	19	3181	19′-2″	12′-6″	24′-2″	15′-1⅞″	9′-6″	14′- 8″	7′- 1⅞″	4′-11⅜″	2′-4¾″	14′-6″	10 9/32″	6″	2½″
	20	3348	19′-2″	13′-0″	25′-2″	15′-1⅞″	10′-0″	14′- 8″	7′- 1⅞″	4′-11⅜″	2′-4¾″	14′-6″	10 9/32″	6″	2½″
L-4	13	2332	20′-2″	9′-6″	18′-2″	15′-2⅞″	6′-6″	15′- 8″	7′- 4¾″	4′- 9½″	2′-3¾″	14′-6″	10 5/8″	5″	2″
	14	2511	20′-2″	10′-0″	19′-2″	15′-2⅞″	7′-0″	15′- 8″	7′- 4¾″	4′- 9½″	2′-3¾″	14′-6″	10 5/8″	5″	2½″
	15	2691	20′-2″	10′-6″	20′-2″	15′-1⅞″	7′-6″	15′- 8″	7′- 4¾″	4′- 8½″	2′-4¾″	14′-6″	10 3/8″	6″	2½″
	16	2870	20′-2″	11′-0″	21′-2″	15′-1⅞″	8′-0″	15′- 8″	7′- 4¾″	4′- 8½″	2′-4¾″	14′-6″	10 5/8″	6″	2½″
	17	3050	20′-2″	11′-6″	22′-2″	15′-1⅞″	8′-6″	15′- 8″	7′ -4¾″	4′- 8½″	2′-4¾″	14′-6″	10 5/8″	6″	2½″
	18	3229	20′-2″	12′-0″	23′-2″	15′-1⅞″	9′-0″	15′- 8″	7′- 4¾″	4′- 8½″	2′-4¾″	14′-6″	10 5/8″	6″	2½″
	19	3409	20′-2″	12′-6″	24′-2″	15′-1⅞″	9′-6″	15′- 8″	7′- 4¾″	4′- 8½″	2′-4¾″	14′-6″	10 5/8″	6″	2½″
	20	3588	20′-2″	13′-0″	25′-2″	15′-1⅞″	10′-0″	15′- 8″	7′- 4¾″	4′- 8½″	2′-4¾″	14′-6″	10 5/8″	6″	2½″
	21	3767	20′-2″	13′-6″	26′-2″	15′-1⅞″	10′-6″	15′- 8″	7′- 4¾″	4′- 8½″	2′-4¾″	14′-6″	10 5/8″	6″	3″
	22	3947	20′-2″	14′-0″	27′-2″	15′-1⅞″	11′-0″	15′- 8″	7′- 4¾″	4′- 8½″	2′-4¾″	14′-6″	10 5/8″	6″	3″
	23	4126	20′-2″	14′-6″	28′-2″	15′-1⅞″	11′-6″	15′- 8″	7′- 4¾″	4′- 8½″	2′-4¾″	14′-6″	10 5/8″	6″	3″
	24	4305	20′-2″	15′-0″	29′-2″	15′-1⅞″	12′-0″	15′- 8″	7′- 4¾″	4′- 8½″	2′-4¾″	14′-6″	10 5/8″	6″	3″

⊗NOTE:—Dimension "H" may be varied to suit customer. When "H" changes dimension "D" and "M" change proportionately.

VOGT WATER TUBE BOILER SETTINGS "TYPE S"



VOGT WATER TUBE BOILER SETTINGS "TYPE S"

DRUM DIAM.	TUBES HIGH	TUBES WIDE	HEATING SURFACE	A	B	C	D	E	F	G	H	K	STEAM OUTLET	FEED WATER
42"	7	11	1572	20'- 1¾"	8'-6"	16'-6"	17'- 2⅜"	5'-6"	9'- 7¼"	2'- 5"	2'- 1⅝"	42"	5"	2"
	8	10	1575	20'- 3⅝"	8'-0"	15'-6"	17'- 8⅛"	5'-0"	10'- 1"	2'- 5"	2'- 2⅞"	42"	5"	2"
	7	12	1720	20'- 1¾"	9'-0"	17'-6"	17'- 2⅜"	6'-0"	9'- 7¼"	2'- 5"	2'- 1⅝"	42"	5"	2"
	9	10	1743	20'- 4⅞"	8'-0"	15'-6"	18'- 1⅞"	5'-0"	10'- 6¾"	2'- 5"	2'- 4⅞"	42"	5"	2"
	7	14	2015	20'- 1¾"	10'-0"	19'-6"	17'- 2⅜"	7'-0"	9'- 7¼"	2'- 5"	2'- 1⅝"	42"	5"	2"
	11	10	2065	20'- 8"	8'-0"	15'-6"	19'- 1½"	5'-0"	11'- 6⅜"	2'- 5"	2'- 7⅜"	42"	5"	2"
	7	16	2311	20'- 1¾"	11'-0"	21'-6"	17'- 2⅜"	8'-0"	9'- 7¼"	2'- 5"	2'- 1⅝"	42"	5"	2"
	13	10	2386	20'-11⅛"	8'-0"	15'-6"	20'- 1⅛"	5'-0"	12'- 5⅝"	2'- 5"	2'-10⅞"	42"	5"	2"
	14	10	2538	21'- 0⅞"	8'-0"	15'-6"	20'- 6⅞"	5'-0"	12'-11¾"	2 - 5"	3'- 0¼"	42"	6"	2½"
	7	18	2607	20'- 1¾"	12'-0"	23'-6"	17'- 2⅜"	9'-0"	9'- 7¼"	2'- 5"	2'- 1⅝"	42"	6"	2½"
	14	11	2804	21'- 0⅞"	8'-6"	16'-6"	20'- 6⅞"	5'-6"	12'-11¾"	2'- 5"	3'- 0¼"	42"	6"	2½"
	9	16	2834	20'- 4⅞"	11'-0"	21'-6"	18'- 1⅞"	8'-0"	10'- 6¾"	2'- 5"	2'- 4⅞"	42"	6"	2½"
	15	11	2990	21'- 2¼"	8'-6"	16'-6"	21'- 0⅝"	5'-6"	13'- 5½"	2'- 5"	3'- 1⅜"	42"	6"	2½"
	8	19	3058	20'- 3⅝"	12'-6"	24'-6"	17'- 8⅛"	9'-6"	10'- 1"	2'- 5"	2'- 2⅞"	42"	6"	2½"
	15	12	3273	21'- 2¼"	9'-0"	17'-6"	21'- 0⅝"	6'-0"	13'- 5½"	2'- 5"	3'- 1⅜"	42"	6"	2½"
	10	17	3285	20'- 6⅞"	11'-6"	22'-6"	18'- 7¾"	8'-6"	11'- 0⅝"	2'- 5"	2'- 6"	42"	6"	2½"
	15	13	3558	21'- 2¼"	9'-6"	18'-6"	21'- 0⅝"	6'-6"	13'- 5½"	2'- 5"	3'- 1⅜"	42"	6"	2½"
	9	20	3560	20'- 4⅞"	13'-0"	25'-6"	18'- 1⅞"	10'-0"	10'- 6¾"	2'- 5"	2'- 4⅞"	42"	6"	2½"
48"	9	21	3743	20'- 4⅞"	13'-6"	26'-6"	18'- 4⅞"	10'-6"	10'- 6¾"	2'- 8"	2'- 4⅞"	48"	6"	3"
	16	13	3758	21'- 3⅜"	9'-6"	18'-6"	21'- 9⅜"	6'-6"	13'-11¼"	2'- 8"	3'- 3⅜"	48"	6"	3"
	9	22	3925	20'- 4⅞"	14'-0"	27'-6"	18'- 4⅞"	11'-0"	10'- 6¾"	2'- 8"	2'- 4⅞"	48"	6"	3"
	16	14	4058	21'- 3⅜"	10'-0"	19'-6"	21'- 9⅜"	7'-0"	13'-11¼"	2'- 8"	3'- 3⅜"	48"	6"	3"
	10	21	4080	20'- 6⅞"	13'-6"	26'-6"	18'-10¾"	10'-6"	11'- 0⅝"	2'- 8"	2'- 6"	48"	6"	3"
	15	15	4122	21'- 2¼"	10'-6"	20'-6"	21'- 3⅝"	7'-6"	13'- 5½"	2'- 8"	3'- 1⅜"	48"	6"	3"
	10	22	4279	20'- 6⅞"	14'-0"	27'-6"	18'-10¾"	11'-0"	11'- 0⅝"	2'- 8"	2'- 6"	48"	6"	3"
	16	15	4358	21'- 3⅜"	10'-6"	20'-6"	21'- 9⅜"	7'-6"	13'-11¼"	2'- 8"	3'- 3⅜"	48"	6"	3"
	10	24	4675	20'- 6⅞"	15'-0"	29'-6"	18'-10¾"	12'-0"	11'- 0⅝"	2'- 8"	2'- 6"	48"	6"	3"
	15	17	4688	21'- 2¼"	11'-6"	22'-6"	21'- 3⅝"	8'-6"	13'- 5½"	2'- 8"	3'- 1⅜"	48"	6"	3"
	10	25	4874	20'- 6⅞"	15'-6"	30'-6"	18'-10¾"	12'-6"	11'- 0⅝"	2'- 8"	2'- 6"	48"	6"	3½"
	16	17	4957	21' 3⅜"	11'-6"	22'-6"	21'- 9⅜"	8'-6"	13'-11¼"	2'- 8"	3'- 3⅜"	48"	6"	3½"
	10	26	5072	20'- 6⅞"	16'-0"	31'-6"	18'-10¾"	13'-0"	11'- 0⅝"	2'- 8"	2'- 6"	48"	6"	3½"
	14	20	5198	21'- 0⅞"	13'-0"	25'-6"	20'- 9⅞"	10'-0"	12'-11¾"	2'- 8"	3'- 0¼"	48"	6"	3½"
	11	26	5512	20'- 8"	16'-0"	31'-6"	19'- 4½"	13'-0"	11'- 6⅜"	2'- 8"	2'- 7⅜"	48"	6"	3½"
	15	20	5536	21'- 2¼"	13'-0"	25'-6"	21'- 3⅝"	10'-0"	13'- 5½"	2'- 8"	3'- 1⅜"	48"	6"	3½"
	11	27	5728	20'- 8"	16'-6"	32'-6"	19'- 4½"	13'-6"	11'- 6⅜"	2'- 8"	2'- 7⅜"	48"	6"	3½"
	15	21	5819	21'- 2¼"	13'-6"	26'-6"	21'- 3⅝"	10'-6"	13'- 5½"	2'- 8"	3'- 1⅜"	48"	6"	3½"
54"	16	20	5852	21'- 3⅜"	13'-0"	25'-6"	22'- 0½"	10'-0"	13'-11⅝"	2'-11"	3'- 3⅜"	54"	8"	3½"
	12	26	5928	20'- 9⅝"	16'-0"	31'-6"	20'- 1⅜"	13'-0"	12'- 0⅜"	2'-11"	2'- 9⅛"	54"	8"	3½"
	16	21	6152	21'- 3⅜"	13'-6"	26'-6"	22'- 0½"	10'-6"	13'-11⅝"	2'-11"	3'- 3⅜"	54"	8"	3½"
	12	28	6392	20'- 9⅝"	17'-0"	33'-6"	20'- 1⅜"	14'-0"	12'- 0⅜"	2'-11"	2'- 9⅛"	54"	8"	3½"
	16	22	6450	21'- 3⅜"	14'-0"	27'-6"	22'- 0½"	11'-0"	13'-11⅝"	2'-11"	3'- 3⅜"	54"	8"	3½"
	13	27	6616	20'-11⅛"	16'-6"	32'-6"	20' -7⅛"	13'-6"	12'- 5⅝"	2'-11"	2'-10¹¹⁄₁₆"	54"	8"	3½"
	15	24	6662	21'- 2¼"	15'-0"	29'-6"	21'- 6⅝"	12'-0"	13'- 5½"	2'-11"	3'- 1⅜"	54"	8"	3½"
	13	28	6865	20'-11⅛"	17'-0"	33'-6"	20'- 7⅛"	14'-0"	12'- 5⅝"	2'-11"	2'-10¹¹⁄₁₆"	54"	8"	3½"
	15	25	6945	21'- 2¼"	15'-6"	30'-6"	21'- 6⅝"	12'-6"	13'- 5½"	2'-11"	3'- 1⅜"	54"	8"	3½"
	13	29	7114	20'-11⅛"	17'-6"	34'-6"	20'- 7⅛"	14'-6"	12'- 5⅝"	2'-11"	2'-10¹¹⁄₁₆"	54"	8"	4"
	15	26	7227	21'- 2¼"	16'-0"	31'-6"	21'- 6⅝"	13'-0"	13'- 5½"	2'-11"	3'- 1⅜"	54"	8"	4"
	13	30	7363	20'-11⅛"	18'-0"	35'-6"	20'- 7⅛"	15'-0"	12'- 5⅝"	2'-11"	2'-10¹¹⁄₁₆"	54"	8"	4"
	16	25	7394	21'- 3⅜"	15'-6"	30'-6"	22'- 0½"	12'-6"	13'-11⅝"	2'-11"	3'- 3⅜"	54"	8"	4"
	15	27	7510	21'- 2¼"	16'-6"	32'-6"	21'- 6⅝"	13'-6"	13'- 5½"	2'-11"	3'- 1⅜"	54"	8"	4"
	16	26	7648	21'- 3⅜"	16'-0"	31'-6"	22'- 0½"	13'-0"	13'-11⅝"	2'-11"	3'- 3⅜"	54"	8"	4"
	15	28	7793	21'- 2¼"	17'-0"	33'-6"	21'- 6⅝"	14'-0"	13'- 5½"	2'-11"	3'- 1⅜"	54"	8"	4"
	14	30	7851	21'- 0⅞"	18'-0"	35'-6"	21'- 0⅞"	15'-0"	12'-11¾"	2'-11"	3'- 0¼"	54"	8"	4"
	16	27	7948	21'- 3⅜"	16'-6"	32'-6"	22'- 0½"	13'-6"	13'-11⅝"	2'-11"	3'- 3⅜"	54"	8"	4"
	15	29	8075	21'- 2¼"	17'-6"	34'-6"	21'- 6⅝"	14'-6"	13'- 5½"	2'-11"	3'- 1⅜"	54"	8"	4"
	16	28	8248	21'- 3⅜"	17'-0"	33'-6"	22'- 0½"	14'-0"	13'-11⅝"	2'-11"	3'- 3⅜"	54"	8"	4"
	15	30	8358	21'- 2¼"	18'-0"	35'-6"	21'- 6⅝"	15'-0"	13'- 5½"	2'-11"	3'- 1⅜"	54"	8"	5"
	16	29	8547	21'- 3⅜"	17'-6"	34'-6"	22'- 0½"	14'-6"	13'-11⅝"	2'-11"	3'- 3⅜"	54"	8"	5"
	15	32	8923	21'- 2¼"	19'-0"	37'-6"	21'- 6⅝"	16'-0"	13'- 5½"	2'-11"	3'- 1⅜"	54"	8"	5"

NOTE: When Row No. 4 is included (with 48" and 54" Drums only) dimension "A" is increased by 1⁹⁄₁₆".
Tube Surface for each No. 4 Tube with 48" Drum is 4.19 square feet and .4 square feet per foot header width which must be added to heating surface.
Tube surface for each No. 4 Tube with 54" Drum is 4.24 square feet and .4 square feet per foot header width which must be added to heating surface. Distance under Front Header may be varied to suit customer which will affect dimension "D" and under Rear Header proportionately.